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THE TEACHING CONTEXT OF A NUTRITION EDUCATION PROGRAM

by

LINDA CAPEL

A THESIS
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ABSTRACT

Within the context of the Nutrition at School program for grades K to 6 in Alberta, this study examined the impact of selected elements of the teaching environment on the teacher's perception of the number of concepts taught, objectives achieved, number of resource materials used, and relative effectiveness of resource materials. A systems model of the teaching environment was proposed indicating that the Nutrition at School program involves a dynamic process of teacher planning in various contexts. The review of literature lead the researcher to formulate four research questions and twenty related problem-oriented hypotheses.

The secondary analysis utilized was descriptive in nature. A sample of 275 teachers responded in the original study. The elements of the teaching environment included in the analysis were teacher attendance at the Nutrition at School workshop, the number of years of teacher involvement in the program, the teacher's perception of the importance of nutrition education, school location (rural/urban) and school enrolment.

Findings indicate that attendance at the Nutrition at School workshop does not effectively distinguish between teachers who implement more or less concepts, achieve more or less objectives, or indicate different levels of use and evaluation of resource materials. Teachers who were involved in the program for one year rather than two years taught more concepts and objectives. Teachers who perceived nutrition education to be of moderate importance rather than high importance taught more concepts and objectives. For grades K to 3, more rural teachers than urban teachers implemented one or more concepts. School enrolment only distinguished between grades 4 to 6 teachers who taught more or less

concepts and achieved more or less objectives. Teachers in mid-size schools rather than small schools taught more concepts and objectives.

Results of the study suggest that future studies investigate the combined impact of the elements as interrelated rather than isolated variables. In addition, methodological refinements of teacher's attitude toward nutrition may be fruitful. A framework is proposed which considers elements of the Nutrition at School program in relation to the family and home/community contexts.

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CHAPTER I

STATEMENT OF THE PROBLEM

The need for nutrition education in the classroom is emphasized in recent literature. Notably, the Nutrition Canada National Survey (1975) and a national report, One Child, One Chance (1973:1) indicate that "... (Canadian) children in particular are suffering the effects of undernutrition that can reduce their physical and mental development and deprive them of their one chance to develop the full potential for their one life." The national report states "... the possibility of malnutrition and undernutrition exists in all segments of our society and its results are in fact, found at all income levels" (1975:35). The importance of focusing on nutrition education for children of all income levels and ages is apparent.

The Nutrition at School Program

In response to the need for nutrition education, Alberta Agriculture initiated the Nutrition at School program in 1973. This program illustrates one possible approach to nutrition education in the classroom. The Nutrition at School program, which is funded and administered by Alberta Agriculture, is available to all elementary schools in Alberta on a rotational basis. Presently, the Nutrition at School program features nutritious food samples in conjunction with nutrition education experiences. The program is taught within the regular school curriculum by the regular classroom teacher.

The Nutrition at School program has three target audiences namely the teacher, the child and the parent. The major goals of the Nutrition at School program refer to each of these audiences as follows:

1. Elementary school children will acquire knowledge about their nutritional needs and the nutritive value of foods; will develop positive attitudes toward eating a variety of foods; and will develop eating habits which foster health and well-being.

2. Parents will acquire knowledge about nutritional needs and be motivated to apply this knowledge to their family's eating habits thereby reinforcing what their children have learned in Nutrition at School.

3. Teachers of elementary school children will include nutritional concepts in their classroom curriculum.

To assist teachers in achieving these goals, a framework is provided consisting of key concepts and teaching objectives. The Nutrition at School program is divided into two levels specifically grades K to 3 and grades 4 to 6. Each level has two key concepts and four teaching objectives. At level one, the primary grades K to 3, the two key concepts are:

1. A balanced daily diet includes foods selected from each of the four food groups.

2. Foods from the four food groups supply the nutrients needed for growth, health and energy.

To facilitate learning of these two concepts, the program is organized into four teaching objectives:

1. Identification - The student will be able to name and enjoy a variety of foods from the four food groups.

2. Classification - The student will be able to classify foods into the four food groups.

3. Selection - The student will be able to choose nutritious snacks and well-balanced meals from the four food groups.

4. Function - The student will explain the importance of foods from the four food groups for growth, health and energy.

At level two, grades 4 to 6, the two key concepts are:

1. A wide variety of nutrients is essential for growth, health and energy.

2. A combination of foods from the four food groups provides the necessary nutrients to perform these functions.

The four teaching objectives associated with these key concepts are:

1. Identification - The student will discover by experiment that different foods contain different nutrients.

2. Classification - The student will classify foods into the four food groups on the basis of nutrient content.

3. Function - The student will identify the functions of the leader nutrients in each of the food groups in terms of growth, health and energy.

4. Selection - The student will choose nutritious snacks and well balanced meals from the four food groups.

This description of the goals, concepts and teaching objectives of the Nutrition at School program outlines the framework that is provided for the teachers. Schools that are accepted on the program must allow teachers to attend a two and a half hour workshop presented by Alberta Agriculture home economists. At the workshop, the teachers are given examples of how the program may be implemented. All the teachers received the Big Ideas in Nutrition Education curriculum package as the basic resource. Within the framework given and using resource materials provided, each teacher may implement the program in a unique way. Yinger (1980) illustrated the fact that teachers differ in the materials and the activities they use, even at similar grade levels in the same school. Specifically, in the Nutrition at School program, each teacher may

implement different nutritional concepts and teaching objectives using various materials and activities.

Various factors may influence the choice and adaptation of learning activities utilized by teachers involved in the Nutrition at School program. To facilitate evaluation of the program, it would be helpful to identify elements that affect the teacher's implementation of concepts and objectives and their evaluation of program materials. A key concept to be used in our study of this phenomenon is the teaching environment.

Many evaluation studies (Humphreys, 1971; Cooper and Philp, 1974; Scharf, 1974; Cook, Eiler and Kaminaka, 1977; Yinger, 1980; and McEwen, 1980) have focused upon various elements within the teaching environment which may influence what is taught. The elements that have been researched include: teacher inservice education, number of years of teaching experience, grade level taught, teacher's perceived importance of the subject matter, teaching degree held, school administrative supports, school location (urban/rural) and school enrolment. Identification and analysis of these elements may assist in interpreting teacher variation in the implementation and evaluation of an existing program.

Focus of the Study

This study will determine the impact of selected variables in the teaching environment on the teacher's implementation of nutritional concepts and teaching objectives and their use and evaluation of materials in the Nutrition at School program. The elements of the teaching environment to be studied are: teacher attendance at the Nutrition at School workshop, number of years of teacher involvement in

the Nutrition at School program, teacher's perception of the importance of nutrition education, school location (rural/urban) and school enrolment.

The research questions to be answered are:

1. Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of concepts implemented?
2. Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of teaching objectives achieved?
3. Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of resource materials used?
4. Is there an identifiable pattern evident between the selected elements of the teaching environment and the teacher's evaluation of the effectiveness of resource materials?

The data for this study was collected during a 1980 evaluation of "The Nutrition at School Program". Secondary analysis of this data was utilized. In addition, overall delimitations are applicable. This study will only deal with those elements of the teaching environment measured in the original study. The present format of the Nutrition at School program which provides a food sample will be under consideration.

CHAPTER II

CONCEPTUAL FRAMEWORK

The conceptual framework for this study is an interactive systems view of the teaching environment. The concepts within this framework will be developed to provide an interpretative device for the study of the research questions posed. The model will be used to further our understanding of the teacher's implementation and evaluation of the Nutrition at School program.

Teacher Planning Process

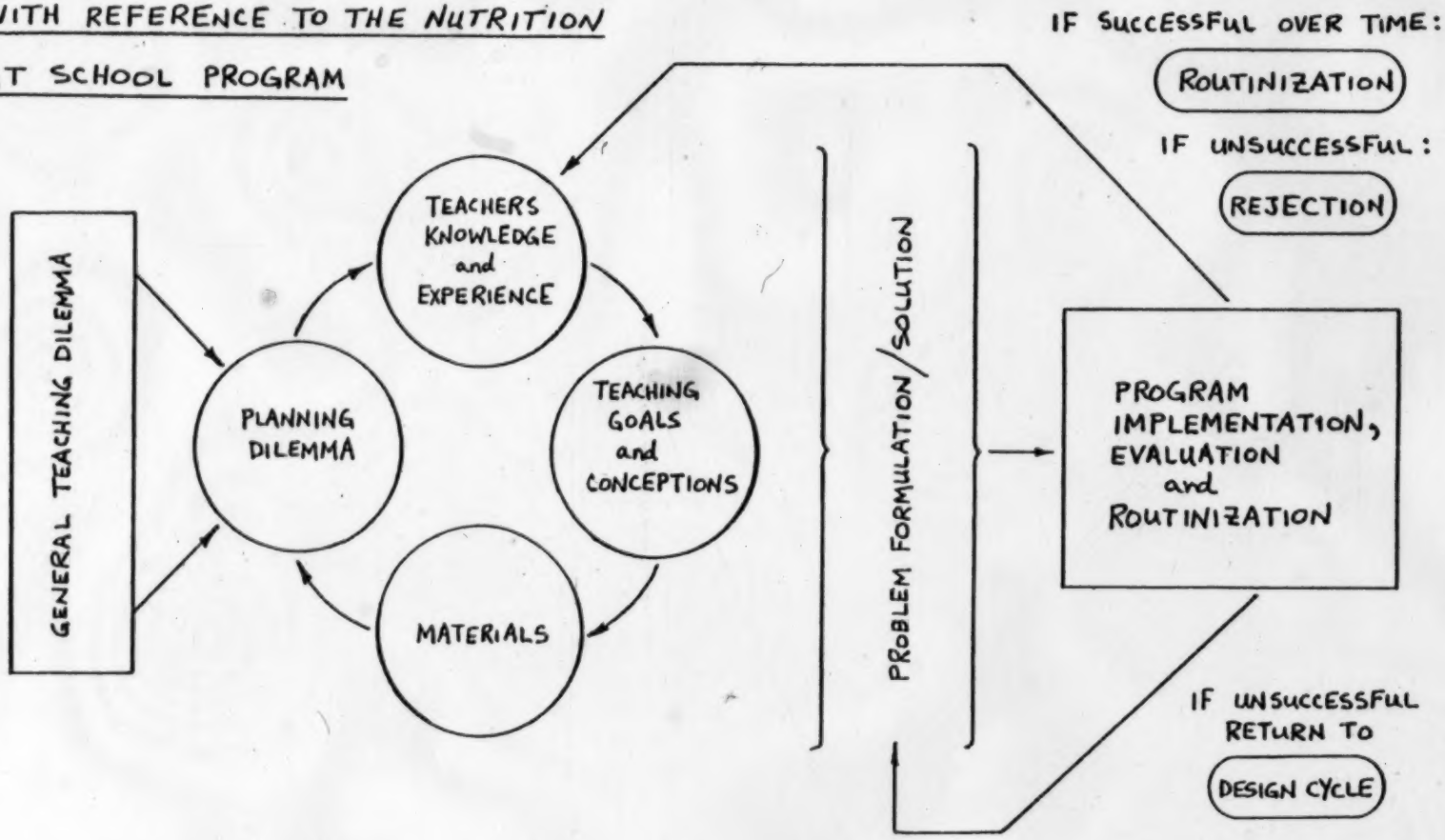
The teacher planning process is an important aspect in the implementation of the Nutrition at School program. Thus, this process should be understood from the teacher's perspective. What are the implications of the Nutrition at School program from the teacher's point of view? Although various teacher planning models have been developed, a comprehensive model by Yinger will be utilized for our purposes.

Yinger (1980) develops a three stage model of teacher planning based on "dilemmas." The general teaching dilemma is stated as "Here is your classroom. Here are your students. Teach them" (1980:116). The planning dilemma facing the teacher is a direct outgrowth of the teaching dilemma. The planning dilemma might be stated in most general form as "I've got to plan for this unit or activity, or lesson" (1980:116). Yinger sees the teacher using a three stage problem solving approach to

resolve these dilemmas. In stage 1, Problem Finding, the general planning task is translated into a specific planning problem. In stage 2, problem formulation/solution or Design, in Yinger's terminology, the initial idea is repeatedly elaborated and tested mentally until a satisfactory solution is found. Stage 3 involves implementation, evaluation, and routinization. In this stage, the activity is usually carried out and evaluated in the classroom. Stages 1 and 3 maybe adapted for our purposes to represent the stages the teacher goes through in planning and implementing the Nutrition at School program (Figure 1).

In stage 1, the teacher planning dilemma is "I've got to plan for this nutritional unit (activity, or lesson) for the Nutrition at School program." The basic process for the teacher at this stage is portrayed as an interaction between four components: the planning dilemma confronting the teacher, the teacher's knowledge and experience, the teaching goals, and materials. Yinger (1980:117) explains these components. Knowledge and experience relates to the ways the teacher has learned to perceive problem situations and the knowledge and methods the teacher can draw from his or her memory. The teacher's knowledge and experience may provide a screen for potential ideas as the teacher compares their effectiveness with the effectiveness of similar ideas in the past. The teaching goal conceptions are the teacher's anticipatory notions of effective teaching for a specific group of students. The component of materials includes not only teaching materials provided by the school or district (such as the Big Ideas in Nutrition Education package) but also any source of information that might be used in the classroom (additional resources).

FIGURE #1: THE TEACHER PLANNING PROCESS WITH REFERENCE TO THE NUTRITION AT SCHOOL PROGRAM



Once a solution to the teaching dilemma is found in stage 2, then the solution is tried out in the classroom and evaluated. This third stage includes the implementation of nutrition education activities in the classroom. If the nutrition activity selected is successfully implemented over time, then the teacher may routinize it. If the activity is not successful, then the teacher may revise it (design cycle) and try it again. If unsuccessful, the teacher may reject the whole activity as unworkable. The results of this third stage add to the teacher's repertoire of knowledge and experience which becomes an important part of subsequent planning. Although the model may be applied to the teacher planning process for one subject area, it must be recognized that the elementary teacher has several subjects to plan for each day.

In this study, we are focusing on stage 3, the teacher's implementation, evaluation and routinization of the Nutrition at School program. We are concerned with identifying elements that influence the number of concepts implemented and objectives achieved by the teacher. We are also interested in the number of resource materials used and the teacher's evaluation of these materials in terms of their effectiveness. By understanding that this stage also affects future teacher planning, implementation, and evaluation, the Nutrition at School program from the teacher's perspective is a dynamic process.

The Teaching Environment

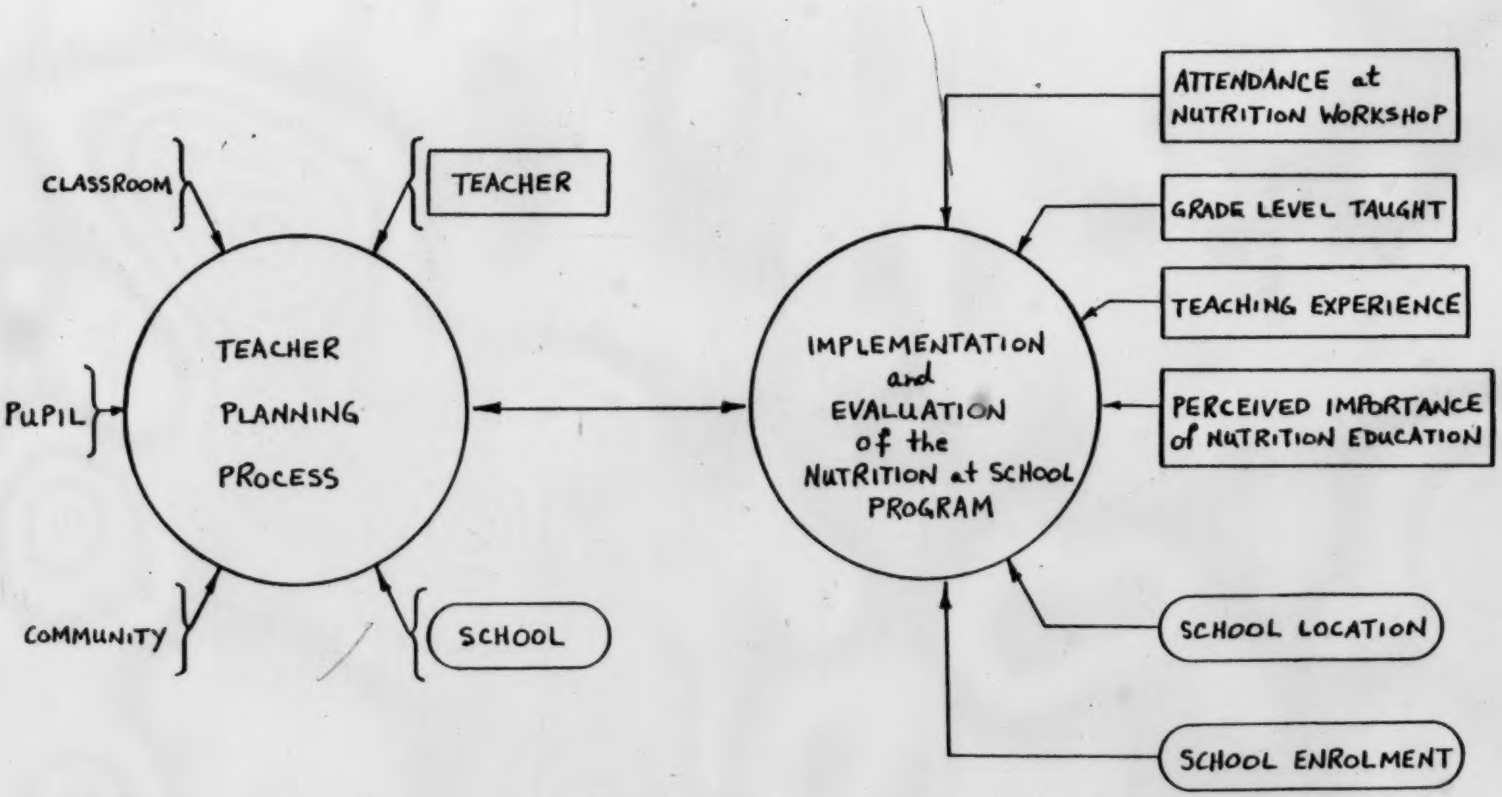
Eboch and Stufflebeam (1974:75) suggest that information referring to the context of educational programs is important. Context information is "that data which describes with some accuracy the total setting of the educational situation." Dunkin and Biddle (1974:38) elaborate on specific contexts applicable to studies of classroom teaching. The

contexts include the teacher, the pupil, the classroom, the school and community. For our purposes, the teaching environment includes the teacher planning process operating in relation to these various contexts. This concept may be diagrammed as follows (Figure 2a). Our study concerns the teacher/school context. Information on the classroom, pupil, and community context is not available in this study.

We are interested in identifying elements within the teacher/school context that relate to the teacher's implementation and evaluation of the Nutrition at School program. The teacher elements that we can identify are attendance at the Nutrition at School workshop, grade level taught, teaching experience in the Nutrition at School program, and teacher's perception of the importance of nutrition education. The school elements that we can identify are school location and school enrolment. These elements may be diagrammed as part of the teaching environment in the following manner (Figure 2b).

In summary, the teaching environment is composed of the teacher planning process and the teacher's implementation and evaluation of the Nutrition at School program. The teacher planning process occurs in various contexts. For our study, selected elements referring to the teacher and school will be identified and related to the teacher's implementation and evaluation of the Nutrition at School program. Thus, we are viewing the teacher's participation in the Nutrition at School program within this particular framework.

FIGURE #2: THE TEACHING ENVIRONMENT



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CHAPTER III

REVIEW OF LITERATURE

This review includes three sections. First, a brief overview of the Nutrition at School program is necessary to provide background information before reviewing the relevant literature. Then a review of descriptive studies undertaken on the Nutrition at School program gives an understanding of the approach historically taken in evaluating this program. Finally, a review of literature that interrelates the elements of the teaching environment and relevant aspects of nutrition education is presented as a basis for the hypotheses used in this study.

The Nutrition at School Program

In 1973, Alberta Agriculture initiated and sponsored the Nutrition at School program. The Nutrition at School program is available to all elementary schools in Alberta on a rotational basis. Schools apply to take part in the program and each year new schools are chosen in order to expose the maximum number of communities to good nutrition habits. Principals and teachers must be committed to the program. Schools must allow teachers to attend a two and one half hour workshop presented by Alberta Agriculture home economists. In this workshop teachers are given background information, shown a variety of methods of teaching nutrition and are provided with resource materials. Teachers are also expected to incorporate nutrition education activities in their regular classrooms using these materials.

Teacher workshops are crucial to the implementation of the Nutrition at School program. The classroom teacher plays a key role in the implementation of the program. The transfer of foods and nutrition information and influence on attitudes towards nutrition, flows from the home economist to the teacher to the students and then to the parents. The workshop format is designed to give participants a reliable foundation of nutrition information and to allow the teachers to participate in some enjoyable nutrition learning (teaching) activities. At the workshop, the philosophy of the program is explained. Each teacher is provided with the colorful idea packages, Big Ideas in Nutrition Education, suitable to their grade level. The key concepts and teaching objectives are discussed. Then the teachers participate in activities related to the concepts and objectives for their grade level. Additional resource materials are available for their review.

The Nutrition at School program runs for approximately twelve weeks with food samples being served from two to four times per week. Menus are developed under the guidance of Alberta Agriculture home economists. A local person from the community is hired by Alberta Agriculture to plan, purchase, prepare and distribute the food samples, leaving the teachers free to emphasize their nutrition teaching.

Individual Nutrition at School programs must show similarity in the way in which the goals of the program are implemented. Some flexibility is allowed to meet local conditions. Examples of flexibility include: participation of all or specified elementary grades in the program; inclusion of kindergarten or junior high; extension of the program beyond a 12 week minimum; the number of times per week the food sample is

served; and the rotation schedule for schools. In addition, schools and teachers are encouraged to plan special events to highlight the nutrition program. Schools are also encouraged to continue the inclusion of nutrition education in following years with the support and consultative services of Alberta Agriculture.

The Home Economics Branch is responsible for administration of the program in all areas outside the cities of Calgary and Edmonton effective April 1, 1979. In Calgary and Edmonton, the Nutrition at School program is administered by the Food Marketing Branch. The Nutrition at School Core Committee is responsible for: establishing policies and procedures for Nutrition at School; overseeing their implementation; and facilitating provincial coordination of the program. The Alberta Agriculture home economists, involved in Nutrition at School, must follow provincial policy and procedures established by the Nutrition at School Core Committee and use resource materials approved by the committee.

In summary, the Nutrition at School program features nutritious food samples together with nutrition education integrated into the regular school curriculum. Teacher workshops are crucial to the implementation of the program. Additional resources are available to teachers. The administration of the program is shared between two branches of Alberta Agriculture: the Food Marketing Branch and the Home Economics Branch. The Nutrition at School Core Committee sets program policy and coordinates the program.

Descriptive Studies of the Nutrition at School Program

Two major studies have evaluated the Alberta Nutrition at School program. Harvey (1976) and Fodor (1979) undertook descriptive studies

that identified the impact of various nutrition formats on student's and teacher's nutritional knowledge, attitudes and behavior. However, there was little interpretation of findings relating these aspects in a meaningful way. These two studies will be reviewed to illustrate the approach used.

Harvey's evaluation was "directed towards identifying and measuring the impact of the various program interpretations on key audiences" (1976:1). The key audiences studied were parents, teachers, students and principals. The relevant findings for this study related to teachers and their implementation of the program. "Many teachers did not have enough time to teach all objectives and a majority of teachers did not find the objectives easy to teach" (1976:121). In addition, "The evaluation of the adequacy of the objectives in meeting student needs revealed some problems with the complexity of objectives 3 (Selection) and 4 (Function) for grade 1. Otherwise, the objectives were judged to meet the majority of student needs in two thirds or more of the classes. There was less consensus on suitability of objectives for grades 4 to 6 than grades 1 to 3" (1976:121). Teacher usage of suggested teaching activities was relatively low in all grades.

Harvey suggested that further work could be done to help teachers relate the objectives to their teaching priorities; revision of objectives should be undertaken with priority given to grades 4 to 6; and alternative formats for suggesting teaching activities should be explored. Harvey's study described the importance of the teacher in implementing the program concepts and objectives through use of resource materials.

Fodor (1979) compared two methods of nutrition instruction used in the Nutrition at School program in 1975/76. Treatment A group were taught using the Big Ideas Package plus food samples. Treatment B group were taught using the Big Ideas approach and numerous multi-media learning activities but no food sample. Fodor commented on the availability and nature of various resource materials as an important element. "Good resources tend to be novel, easy to prepare and present, motivating to students, and enjoyable to both student and teacher. Snack foods as resources can provide for each of these requirements, while other resources may not.... The physical properties of films, games, books and models cannot be manipulated to the same extent. Once used, many of these lack their interest or novelty effect" (1979:60-61). Fodor suggested that teachers may lack the time or inclination to seek out presentation alternatives and recommended that "teachers should have easy access to resource material. Supportive audio-visual packages could be placed in school libraries so that they are more easily accessible. This would eliminate the need to have to order or wait for these materials" (1979:63).

A comprehensive discussion of the teaching environment and related elements has been presented by McEwen (1981) in the study Evaluation of the Nutrition at School Program: Teacher Involvement. The impact of various elements on the implementation of nutrition education programs was emphasized. "These elements affect which nutritional concepts are taught in the classroom and which teaching objectives are met, how much time is devoted to nutrition education, which nutrition resource materials are used..." (1981:41).

Within the teacher context, McEwen identified the effect of variations in teacher's interest, previous training and flexibility on integrating nutrition education into the teacher's lesson plans. The commitment of the teacher to nutrition education was also noted as a factor in the successful implementation of the nutrition program. The way an individual teacher evaluated his or her ability to teach a subject may also affect the program implementation.

In the school context, schools differed in their scheduling flexibility and the administrative support given to teaching nutrition education. Another important element was the total number of subjects taught at a particular grade level. The teacher must decide among competing alternatives whether to incorporate nutrition education into the classroom lesson plans. McEwen identified the variation in availability of materials to the school as another important element related to nutrition education programs.

In summary, Harvey (1976), Fodor (1979), and McEwen (1981) identified elements that influenced perceived teacher involvement and effectiveness of resource materials in the Nutrition at School program. The importance of various elements was suggested but their association was not analyzed in a quantitative way. However, McEwen (1981:48) indicated the need for further research to illustrate the influence of the different elements in the teaching environment on nutrition education in the school.

Elements in the Teaching Environment

This section will review findings of the relationship between elements of the teaching environment and aspects of teacher's

implementation, use and evaluation of materials in nutrition education. The elements reviewed include grade level, teacher's perceived importance of nutrition education, teacher training, teacher attendance at nutrition workshops (in service and general), years of teaching experience, teaching degree held, administrative support, school location, and school enrolment. Based on the review, hypotheses will be presented.

Grade level. Cook, Eiler and Kaminaka (1977:131) found that grade level affects the extent of classroom teaching of nutrition. Extent of classroom teaching was indicated by the number of hours nutrition was taught by the teacher per year. A higher number of hours was spent by teachers in grades K to 3 on classroom activities related to nutrition/foods than by 4 to 6 teachers. Petersen and Kies (1972) reported similar results in their survey. Cook et al. also found that teachers in the upper grades, particularly grade 6, were significantly less likely to teach nutrition than were early grade teachers.

McEwen (1980) found that the percentage of teachers teaching each nutrition concept and achieving specific objectives was lower for teachers of grades 4 to 6 than for the K to 3 teachers. Shannon, Bell, Marbuch, O'Connell, Graves and Nicely (1981:12) completed a K to 6 nutrition curriculum evaluation study. Their findings indicated that overall, and particularly among the higher grades, the average number of reported sessions on nutrition was well below the number that had been requested by the investigators. However, the large variability in reported sessions and in minutes spent per session indicated that some teachers made extensive efforts while others devoted little classtime to nutrition.

Cook et al. found that more than 70% of the teachers believed nutrition could be taught most effectively at the elementary level (grades K to 3 or grades 4 to 6). However, the majority of elementary teachers felt nutrition was most effectively taught in a grade level other than their own. Teachers were more likely to teach nutrition if they felt that their own grade level was the most effective at which it should be taught. Clearly, it was important for the teacher to feel (s)he was the most appropriate nutrition teacher.

Teacher attitudes, training, experience and administrative support. Cook et al. (1977) also found that the teacher's attitude toward nutrition was significant. If a teacher felt nutrition was important then (s)he spent more hours of class time teaching it. Teachers who felt that nutrition should be included as part of the curriculum throughout the year were more likely to teach nutrition than teachers who felt nutrition was best taught within a period of a few weeks.

O'Connell, Shannon and Sims (1981) assessed nutrition-related attitudes and beliefs of K to 6 teachers and the association with teaching nutrition and type of teacher preparation received. The hypotheses tested were:

1. The attitude postscores...of K-6 teachers who taught nutrition will differ significantly from that of teachers who did not teach nutrition in their classes. This difference will be influenced by whether they did or did not attend the 3-hour inservice session.

2. The teachers' attitude postscores will differ according to the type of preparation they received for teaching nutrition (no preparation session, attended a 3-hour inservice, or attended a 3-credit nutrition course).

Three attitude scales were developed and respectively designated as Nutrition is Important Attitude Scale, Favors Nutrition in Schools Attitude Scale and Commitment to Teaching Nutrition Attitude Scale. The results for each scale were presented.

The findings of the Nutrition is Important Attitude Scale indicated that teachers felt nutrition was important. There were no significant differences measured between teachers who taught or did not teach nutrition regardless of whether they attended the inservice session. The three types of teacher preparation did not differentially affect scores on this attitude scale.

The attitude scale Favors Nutrition Education in Schools indicated a significant effect of the teaching experience, with teachers who taught nutrition having slightly but significantly higher postscores than those not teaching nutrition. This effect was not influenced by attendance or non attendance at the inservice. The three types of preparation did not differentially influence the teachers' postscores.

The Commitment scale results indicated that when nutrition was considered in competition with other courses for classtime, it received only moderate support from the teachers. Teaching nutrition had no significant effect on teacher postscores, nor did attending the inservice session. The three types of preparation did not differentially affect these scores.

In summary, a favorable attitude toward nutrition education in schools was not necessarily accompanied by a strong commitment to, or interest in, actually teaching nutrition. Actual experience in teaching nutrition may result in teachers being more favourable toward its

inclusion in schools. The preparation for teaching nutrition had no significant affect on teachers' commitment or attitude scale scores.

Cook et al. (1977) referred to teacher training as exposure to a high school nutrition/foods course or a college nutrition/foods course or an inservice nutrition workshop. Elementary teachers with such training were significantly more likely to include nutrition in their curricula than teachers without such training. The study indicated that teachers with prior training in nutrition spent a significantly greater number of class hours teaching the subject. In Ontario, Cooper and Philp (1974) found over 70% of the teachers began teaching nutrition in the classroom following attendance at a nutrition education workshop. However, Cook et al. found that the number of general nutrition workshops a teacher attended was not significantly related to whether nutrition was included in a teacher's classroom activities.

The university degree held by the teacher was not significantly related to whether nutrition was included in a teacher's classroom teaching (Cook et al., 1977). However, Cooper and Philp (1974) found that teachers, under school boards and consultants who strongly endorsed the nutrition program, covered the workshop objectives to a greater extent in both breadth and depth in the classroom. The extent of coverage was determined by identifying the number of program objectives covered in the classroom, the extent of their coverage and the order in which they were taught.

School location. Many studies (Cooper and Philp, 1974; Scharf, 1974; Humphreys, 1971; McEwen, 1980) utilized varying definitions of

rural/urban locations. Some definitions were based on population and proximity to larger centres (Cooper and Philp, 1974; Humphreys, 1971). Other studies (McEwen, 1980) were based on administrative definitions. These discrepancies made comparability of results most difficult.

Scharf (1974) presented a comprehensive review of important variables related to differences in rural/urban quality of education. Scharf indicated that rural elementary schools suffer from inadequate library and instructional resources, narrow education experiences, fewer opportunities for teacher's professional development, lack of instructional support, and teacher training based on assumptions that are not valid in the rural setting. According to the literature, these variables were related to whether teachers offered nutrition education and the extent to which they taught nutrition in the classroom.

Regarding degrees held by teachers, both Humphreys and Scharf found urban teachers held better qualifications than rural teachers. However, Cook et al. (1977) found the degree held by teachers was not significantly related to whether nutrition was included in a teacher's classroom teaching.

Scharf found no statistically significant difference in years of teaching experience between rural and urban teachers. Cook et al. found that years of teaching experience were not significantly related to whether nutrition was included in a teacher's classroom teaching.

School enrolment. Scharf (1974), in a study of urban/rural differences in Saskatchewan elementary schools, discussed size of school and availability of instructional resources and aids. In assessing library resources within rural schools, the size of school was not

significantly related to the per pupil number of books. However, there was a significantly larger variety of books available in larger rural schools than smaller rural schools. He found that most rural teachers and especially those in smaller schools were unable to implement the enquiry learning-individualized instruction process due to limited availability of library resources. In summary, he found that within the rural school sample, the availability of the instructional aids and resources was directly related to the size of the school with smaller schools having the fewest resources.

Humphreys (1971:9) supported these findings in that "the size of school is indicative of the degree to which facilities and experienced teaching, resource and administrative personnel can be provided. It is also indicative of the difficulties teachers may encounter in coping with students who differ in interests, age and aptitude. Large schools, while easing the provision of facilities, make personal relationships more difficult. To ensure good personal relationships along with economy it appears that schools with about nine to twenty-five teachers are most appropriate at the elementary school level."

Hypotheses

This review of literature has provided an overview of information relative to the elements of the teaching environment under consideration in this study. From the review of literature, the following questions and hypotheses are derived.

Question 1. Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of concepts implemented?

1. Teachers who attend the Nutrition at School workshop will implement more concepts than teachers who do not attend the workshop.
2. Teachers who are involved in the Nutrition at School program for two years will implement more concepts than teachers who are involved for one year.
3. Teachers who perceive nutrition education to be more important will implement more concepts than teachers who perceive nutrition education as less important.
4. Teachers in urban schools will implement more concepts than teachers in rural schools.
5. Teachers in schools with lower enrolments will implement more concepts than teachers in schools with higher enrolments.

Question 2. Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of teaching objectives achieved?

1. Teachers who attend the Nutrition at School workshop will achieve more objectives than teachers who do not attend the workshop.
2. Teachers who are involved in the Nutrition at School program for two years will achieve more objectives than teachers who are involved for one year.
3. Teachers who perceive nutrition education to be more important will achieve more objectives than teachers who perceive nutrition education as less important.

4. Teachers in urban schools will achieve more objectives than teachers in rural schools.
5. Teachers in schools with lower enrolments will achieve more objectives than teachers in schools with higher enrolments.

Question 3. Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of resource materials used?

1. Teachers who attend the Nutrition at School workshop will use more resource materials than teachers who do not attend the workshop.
2. Teachers who are involved in the Nutrition at School program for two years will use more resource materials than teachers who are involved for one year.
3. Teachers who perceive nutrition education to be more important will use more resource materials than teachers who perceive nutrition education as less important.
4. Teachers in urban schools will use more resource materials than teachers in rural schools.
5. Teachers in schools with higher enrolments will use more resource materials than teachers in schools with lower enrolments.

Question 4. Is there an identifiable pattern evident between the selected elements of the teaching environment and the teacher's evaluation of the effectiveness of resource materials?

1. Teachers who attend the Nutrition at School workshop will evaluate the resource materials as more effective than teachers who do not attend the workshop.

2. Teachers who are involved in the Nutrition at School program for two years will evaluate the resource materials as more effective than teachers who are involved for one year.
3. Teachers who perceive nutrition education to be more important will evaluate the resource materials as more effective than teachers who perceive nutrition education as less important.
4. Teachers in rural schools will evaluate the resource materials as more effective than teachers in urban schools.
5. Teachers in schools with lower enrolments will evaluate the resource materials as more effective than teachers in schools with higher enrolments.

CHAPTER IV

RESEARCH DESIGN

The data source for this analysis was an evaluation project undertaken by Kieren and McEwen (1981) for the Alberta Department of Agriculture. A summative evaluation of the Nutrition at School program in Alberta was conducted. The study looked at teacher involvement in teaching nutrition concepts, use of nutrition education resource materials, and reaction to follow-up materials developed for the program.

A province-wide survey of teachers of grades K to 6 was conducted by mail and telephone interviews. The final sample consisted of 275 completed teacher questionnaires. Respondents' names were obtained from Alberta Education staff lists for specific schools on the Nutrition at School program (identified by Alberta Agriculture).

The sampling criteria and procedures, design of the interviewing instrument, and pretesting were carried out by the original researchers. This author assisted with telephone interviewing for the larger study as well as the sampling, data collection and coding phases for a subsample of the study.

Sampling

Several criteria applied to teachers included in the sample for this study. The three criteria to be met for inclusion in the sample were as follows:

1) Currently teaching grades K to 6.
2) Involvement in the Nutrition at School program in one or more school years from 1976/77 to 1979/80.
3) Currently teaching at the same school as when they were involved in the Nutrition at School program.

Lists of teachers were provided by Alberta Education indicating that 4417 staff met the sample criteria. The sample was stratified by location (rural, Edmonton separate, and Calgary) and by year. The number of teachers drawn from each category was determined by a proportional allocation based upon the total number of teachers in each group. The desired sample size of approximately 500 was achieved with 30 teachers from Edmonton separate, 74 teachers from Calgary and 400 teachers from rural schools.

Data Collection

Due to the Calgary teachers' strike, data was collected in two stages. Edmonton separate and rural data was collected during June and July 1980. The Calgary data was collected during November and December 1980. Similar procedures were followed for both stages. Introductory letters were sent by Alberta Agriculture to superintendents and principals of those schools involved in the Nutrition at School program in any of the past four years. The introductory letters were intended to inform the administrators of the study and to seek their assistance. Approximately one week later, the questionnaires were mailed to the teachers. Follow-up letters were sent to teachers who had not returned their questionnaires. In addition, a reminder telephone call was made to

the Edmonton and Calgary sample requesting them to complete and return their questionnaires. To check completeness of the questionnaire method, three trained interviewers conducted telephone interviews with thirty-seven teachers. The quality of information obtained was comparable to that obtained by the mailed questionnaires and thus was not treated separately in the analysis.

A total of 504 questionnaires were mailed. Two hundred and sixty-eight questionnaires were returned. However, thirty questionnaires were not completed. The remaining 238 completed questionnaires represent a return rate of 47%. This return rate, while seemingly low, compares favourably with other mailout questionnaire surveys which have been reported to have an average return of 10 to 50 percent (Selltiz, Jahoda, Deutsch and Cook, 1959). In addition, the return rate is quite high considering the time of year (end of term) and the circumstances (post teachers' strike) when some teachers received the questionnaire. For the purposes of this present study, the sample consisted of 275 respondents, specifically, 238 questionnaires plus 37 telephone interviews.

Instrumentation

Data was collected for an evaluation of teacher involvement in the Nutrition at School program (McEwen, 1980). A thirteen page questionnaire was designed to examine twelve pertinent issues (McEwen, 1980:6-7) identified by the Nutrition at School Core Committee. The final questionnaire consisted of four parts. Part one obtained demographic information about the teacher and school. Part two determined what nutritional concepts and teaching objectives were met by

the teacher while on the Nutrition at School program and in subsequent years. Part three dealt with the teachers' use and evaluation of resource materials in nutrition education. The issues of suitable follow-up materials and avoiding repetition in the program were also addressed. Part four related to additional follow-up issues.

For purposes of this study, the sections of particular interest include demographic information, nutritional concepts and teaching objectives met by the teacher, and the teacher's use and evaluation of resource materials (see Appendix A). For further clarification, the five independent variables considered in this study will be presented with the corresponding questionnaire item.

Variable 1. Teacher attendance at the Nutrition at School Workshop (by year first attended).

Question:
Did you attend Nutrition at School teacher workshop(s)?
Yes _____ No _____

If yes, please state in which year(s) _____

Variable 2. Number of years of teacher involvement in the Nutrition at School program.

Question:
As a teacher, in which school year(s) were you involved in the Nutrition at School program? Please check the year(s) that you were involved:

1973/74	____	1977/78	____
1974/75	____	1978/79	____
1975/76	____	1979/80	____
1976/77	____		

Variable 3. Teacher's perceived importance of nutrition education.

Question:
In order for the children to retain the information learned in the Nutrition at School program how often do you feel they need to be exposed to nutrition education in the school?

Every month _____
Every year _____
Every two years _____
Every three years _____

A limitation of secondary analysis is apparent in attempting to measure this variable. The data is obtained from responses to a question which is an indirect measure of the related variable. The question refers to teacher's perception of the frequency of teaching nutrition education which is required for children to retain nutrition education information learned in the program. The researcher considers this an indirect indicator of the teacher attitude construct "perceived importance of nutrition education." The assumption is made that teachers who consider nutrition education to be more important will believe it should be taught more frequently.

Variable 4. School location (rural/urban).

Question:
Where is your school located? Check one:

Calgary _____
Edmonton _____
Other (please specify) _____

Variable 5. School enrolment.

Question:
Approximately how many students attend your school? _____

The four dependent variables and corresponding questionnaire items give an example of the format used. The original questionnaire items are edited to illustrate data pertinent to this study.

Variable 1. Number of concepts taught by year.

Question:
For each CONCEPT listed below: Check each year in which you taught the concept.

CONCEPTS for Teachers of Grades K to 3:	Years 1976/1977	1977/1978	1978/1979	1979/1980
A. A balanced daily diet includes foods selected from each of the four food groups.	___	___	___	___

A second concept for teachers of grades K to 3 was identified using the same format. For teachers of grades 4 to 6, a separate section of the questionnaire using the same format identified the concepts taught by year.

Variable 2. Number of objectives achieved by year.

Question:
For each TEACHING OBJECTIVE listed below: Check each year in which you feel you met the teaching objective.

TEACHING OBJECTIVES for Teachers of Grades K to 3:	Years 1976/1977	1977/1978	1978/1979	1979/1980
A. Identification - The student will be able to name and enjoy a variety of foods from the four food groups.	___	___	___	___

Three additional teaching objectives were presented for grades K to 3 teachers using the same format. In a separate section, teachers of grades 4 to 6 indicated which of four teaching objectives were met by year as above.

Variable 3. The number of resource materials used by year.

Question:
The following is a list of nutrition education resource materials you received at the Nutrition at School teacher workshop.

For each material listed:
Check off all the years in which you used that resource material.

Materials for Teachers of Grades K to 3:	Years 1976/1977	1977/1978	1978/1979	1979/1980
"Big Ideas in Nutrition Education" envelope	___	___	___	___

For teachers of grades K to 3, eight additional resources were listed using this format. Initially, nine materials were listed for grades 4 to 6 teachers in a separate section of the questionnaire.

Variable 4. The perceived effectiveness of resource materials.

Question:
Circle the number in the right hand column corresponding to how effective that resource material was for you in teaching nutritional concepts for your classroom.

Materials for Teachers of Grades K to 3:					Effectiveness for teaching nutritional concepts VERY EFFECTIVE				NOT EFFECTIVE
"Big Ideas in Nutrition Education" envelope	___	___	___	___	5	4	3	2	1

Seven additional materials were listed for grades K to 3. Eight additional materials appeared for grades 4 to 6.

Secondary Analysis

This study utilized secondary analysis of data which was collected for an evaluation of the Nutrition at School Program. Within an evaluation framework, the original study considered the teachers' implementation of specific concepts and objectives and the evaluation and use of particular resource materials. The current analysis identifies specific elements in the teaching environment for further study. The secondary analysis of data relates these specific elements to the number of concepts and objectives implemented, the number of resource materials used and the evaluation of effectiveness of resource materials by the teacher. The major method of analysis utilized was crosstabulations. The purpose of this analysis was to describe patterns that will assist decision makers in further program development.

Several factors reduced the number of respondents that might otherwise be included in the secondary analysis. The crosstabulations required that a respondent answer both questions correponding to the independent and dependent variables. Those respondents who answered only one question of each set or gave an inconsistent answer were deleted. In addition, inconsistent or inaccurate coding was the basis for deleting further respondents. The remaining data was separated into additional categories by years. Consequently, the small cell sizes obtained were a major limiting factor in considering the type of analysis that was feasible. The descriptive approach seemed appropriate in view of the

level of measurement of the dependent and independent variables. The data included nominal, ordinal, and interval levels of measurement.

In summary, a descriptive analysis was deemed most appropriate due to the small cell sizes and the various levels of measurement of the data. Rigorous statistical testing was not feasible, given that the assumptions necessary for these tests, such as homogeneity of variance, could not be fulfilled.

The data is presented using raw numbers and adjusted percentages. On all tables, the percentages reported are based on valid responses to questions on the questionnaires. All missing and non-applicable responses were excluded from percentage calculations, which are reported as adjusted percentages. Percentages are presented for comparative purposes to identify trends.

While statistical tests were not deemed appropriate for this data, some guideline was necessary to determine whether the research questions could be answered using the descriptive data available. The method selected was to use a decision guideline of percentage difference. Ten percentage points difference was selected in order to identify a trend or pattern in the data. The percentage difference was considered sufficiently stringent considering that in many cases the group of teachers being described made up 30% or less of the total sample. For example, 70% of the teachers taught two concepts regardless of other factors.

The researcher has designated a 10% difference existing between categories in three out of four years as indicative of a noteworthy trend. For example, the researcher compared the percentage of attenders

and non attenders at the Nutrition at School workshop who taught one or more concepts in each year. The predicted occurrence was that attenders would teach more concepts than non attenders. Thus, if 10% more of the attenders compared to non attenders taught one or more concepts during three out of four years, this pattern would support the stated hypothesis. If these decision levels were not met, then a trend could not be identified. The hypothesis would not be supported under these circumstances.

The data were grouped for each of the four dependent variables. In completing the crosstabulations, the following categories were created for each variable. Question 1 considered the number of concepts taught by the teacher. The researcher compared teachers who taught no concepts with those who taught one or more concepts. The small cell sizes and uneven distribution of data between categories precluded discussing teachers who taught one or two concepts separately. Question 2 considered the number of objectives achieved by the teacher. The researcher compared teachers who achieved no objectives with those who achieved one or more objectives for reasons previously indicated. Question 3 concerned the number of resource materials used by teachers. A range of low, moderate, and high usage is discussed for each year. Low usage of materials corresponds to grades K to 3 or grades 4 to 6 teachers using 0 to 2 materials. Moderate usage of materials corresponds to grades K to 3 or 4 to 6 teachers using 3 to 5 materials. High usage indicates grades K to 3 teachers using 6 to 8 materials or grades 4 to 6 teachers using 6 to 9 materials. In Question 4, the teacher's evaluation of effectiveness of resource materials is indicated on a 5-point scale

ranging from high effectiveness (5) to low effectiveness (1). The ratings are combined to indicate low effectiveness (1 and 2 responses), moderate effectiveness (3) and high effectiveness (4 and 5) ratings. This method of grouping data was undertaken to assist in identifying trends.

In summary, this chapter discussed sampling procedures and data collection of the original study. The instrumentation and secondary data analysis specific to the study was presented.

CHAPTER V

REPORT OF FINDINGS OF THE STUDY

This chapter reports the findings of this study using the following format. The research question and hypothesis are stated. The results for grades K to 3 and grades 4 to 6 teachers are discussed separately. Noteworthy trends both within years and across four years of data are considered. As previously indicated in Chapter IV, a decision level of 10% or higher was required for three years of data to identify a trend. The tables report adjusted percentages meaning that missing and non-applicable reponses were excluded from percentage calculations.

Results Relating to Research Question 1

Question 1. Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of concepts implemented?

Hypothesis 1. Teachers who attend the Nutrition at School workshop will implement more concepts than teachers who do not attend the workshop.

Table 1 reported the data for teachers of grades K to 3 considered for this question. At least 70% of the teachers in each year taught two concepts whether they were workshop attenders or non attenders. When the data was examined in more depth, there was some effect of attending the workshop. Table 1 indicated that a higher percentage of grades K to 3

Table 1

Number of Concepts Taught by Grades K to 3 Teachers
by Attendance at the Nutrition at School Workshop

Year Concept Taught	Workshop Attendance	Number of Concepts Taught 0	1	2
1976/77	Didn't Attend n = 4	0 (0.0)	0 (0.0)	4 (100.0)
	Did Attend n = 13	0 (0.0)	0 (0.0)	13 (100.0)
1977/78	Didn't Attend n = 9	2 (22.2)	0 (0.0)	7 (77.8)
	Did Attend n = 28	2 (7.1)	1 (3.6)	25 (89.3)
1978/79	Didn't Attend n = 13	2 (15.4)	1 (0.0)	25 (84.6)
	Did Attend n = 66	2 (13.6)	1 (3.0)	25 (83.3)
1979/80	Didn't Attend n = 22	6 (27.3)	1 (4.5)	15 (68.2)
	Did Attend n = 135	21 (15.6)	9 (6.7)	105 (77.7)

Note. For all tables, adjusted percentages are reported in brackets and are based on valid responses only.

teachers who attended the workshop taught one or more concepts compared to non attenders (15% higher in 1977/78 and 12% higher in 1979/80). There was no difference in 1976/77 and 1978/79 between the percentage of attenders and non attenders who taught one or more concepts. Since data for only two of the four years indicated a 10% difference, there was no identifiable pattern to support the hypothesis.

For grades 4 to 6 (Table 2), over 55% of the teachers in each year taught two concepts whether they were attenders or non attenders at the workshop. In 1976/77 and 1978/79, there was no difference between the percentage of attenders and non attenders who implemented one or more concepts. In 1977/78 and 1979/80, a higher percentage of non attenders taught one or more concepts (30% and 10% higher, respectively). For grades 4 to 6 teachers, the hypothesis was not accepted due to insufficient evidence.

Hypothesis 2. Teachers who are involved in the Nutrition at School Program for two years will implement more concepts than teachers who are involved for one year.

For testing this hypothesis (Table 3), the researcher considered teachers with one or two years of involvement in the program. Teachers with three years of involvement were excluded due to the small number of responses which would skew the results. A consistent pattern was evident for grades K to 3 teachers. In all years, the highest percentage of teachers who implemented one or more concepts were involved for one year rather than two years. The pattern identified was not in the predicted direction. Therefore, the data did not support the hypothesis.

Table 2

Number of Concepts Taught by Grades 4 to 6 Teachers
by Attendance at the Nutrition at School Workshop

Year Concept Taught	Workshop Attendance	Number of Concepts Taught 0	1	2
1976/77	Didn't Attend n = 4	0 (0.0)	0 (0.0)	4 (100.0)
	Did Attend n = 9	0 (0.0)	1 (11.1)	8 (88.9)
1977/78	Didn't Attend n = 6	0 (0.0)	0 (0.0)	6 (100.0)
	Did Attend n = 17	5 (29.4)	2 (11.8)	10 (58.8)
1978/79	Didn't Attend n = 9	3 (33.3)	1 (11.1)	5 (55.6)
	Did Attend n = 33	11 (33.3)	1 (3.0)	21 (63.6)
1979/80	Didn't Attend n = 16	3 (18.8)	1 (6.3)	12 (75.0)
	Did Attend n = 81	23 (28.4)	3 (3.7)	55 (67.9)

Table 3

Number of Concepts Taught by Grades K to 3 Teachers
by Number of Years of Teacher Involvement
in the Nutrition at School Program

Year Concept Taught	Number of Years of Involvement	Number of Concepts Taught 0	1	2
1976/77	1	1	0	21
	n = 22	(4.5)	(0.0)	(95.5)
	2	2	1	11
	n = 14	(14.3)	(7.1)	(78.6)
	3	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)
1977/78	1	1	1	37
	n = 39	(2.6)	(2.6)	(94.8)
	2	6	1	11
	n = 18	(33.3)	(5.6)	(61.1)
	3	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)
1978/79	1	8	4	59
	n = 71	(11.3)	(5.6)	(83.1)
	2	7	1	16
	n = 24	(29.2)	(4.2)	(66.6)
	3	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)
1979/80	1	21	11	107
	n =139	(15.1)	(7.9)	(77.0)
	2	8	1	16
	n = 25	(32.0)	(4.0)	(64.0)
	3	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)

In Table 4, teachers of grades 4 to 6 indicated the same pattern. The percentage of teachers involved for one year who implemented one or more concepts was on the average 14% higher compared to teachers involved for two years. The decision level requirements for three out of four years were met indicating the number of years of involvement in the program did have an impact on the number of concepts taught. The hypothesis was not supported since the trend was in the opposite direction.

Hypothesis 3. Teachers who perceive nutrition education to be more important will implement more concepts than teachers who perceive nutrition education as less important.

For grades K to 3, Table 5 indicated that over 60% of the teachers in each year taught two concepts regardless of the perceived level of importance of nutrition education. The levels of importance indicated were either high importance (taught monthly), moderate importance (taught yearly) or low importance (taught every two or three years). For the hypothesis to be supported, the researcher expected the highest percentage of teachers who taught one or more concepts would indicate nutrition education was of high importance. In three out of four years, the highest percentage of grades K to 3 teachers implementing one or more concepts indicated nutrition education was of moderate importance. The identified pattern was in the opposite direction to that predicted so the hypothesis was not accepted.

For grades 4 to 6 teachers (Table 6), over 40% of the teachers taught one or more concepts. Relative to grades K to 3 (Table 5), a broader percentage distribution of grades 4 to 6 teachers was evident

Table 4

Number of Concepts Taught by Grades 4 to 6 Teachers
by Number of Years of Teacher Involvement
in the Nutrition at School Program

Year Concept Taught	Number of Years of Involvement	Number of Concepts Taught 0	1	2
1976/77	1	0	0	9
	n = 9	(0.0)	(0.0)	(100.0)
	2	1	2	5
	n = 8	(12.5)	(25.0)	(62.5)
	3	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)
1977/78	1	5	1	13
	n = 19	(26.3)	(5.3)	(68.4)
	2	2	2	7
	n = 10	(20.0)	(10.0)	(70.0)
	3	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)
1978/79	1	9	1	28
	n = 38	(23.7)	(2.6)	(73.7)
	2	7	1	5
	n = 13	(53.8)	(7.7)	(38.5)
	3	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)
1979/80	1	22	4	61
	n = 87	(25.3)	(4.6)	(70.1)
	2	6	0	7
	n = 13	(46.2)	(0.0)	(53.8)
	3	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)

Table 5

Number of Concepts Taught by Grades K to 3 Teachers
by How Often Nutrition Education Should be Taught

Year Concept Taught	Frequency of Teaching Nutrition	Number of Concepts Taught 0	1	2
1976/77	Monthly	3	1	6
	n = 10	(30.0)	(10.0)	(60.0)
	Yearly	0	1	18
	n = 19	(0.0)	(5.3)	(94.7)
	Every 2 yrs.	0	0	5
	n = 5	(0.0)	(0.0)	(100.0)
	Every 3 yrs.	0	0	4
	n = 4	(0.0)	(0.0)	(100.0)
1977/78	Monthly	4	0	8
	n = 12	(33.3)	(0.0)	(66.7)
	Yearly	2	3	30
	n = 35	(5.7)	(8.6)	(85.7)
	Every 2 yrs.	0	0	8
	n = 8	(0.0)	(0.0)	(100.0)
	Every 3 yrs.	2	0	3
	n = 5	(40.0)	(0.0)	(60.0)
1978/79	Monthly	6	0	17
	n = 23	(26.1)	(0.0)	(73.9)
	Yearly	4	6	45
	n = 55	(7.3)	(10.9)	(81.8)
	Every 2 yrs.	2	0	11
	n = 13	(15.4)	(0.0)	(84.6)
	Every 3 yrs.	2	0	3
	n = 5	(40.0)	(0.0)	(60.0)
1979/80	Monthly	6	4	27
	n = 37	(16.2)	(10.8)	(73.0)
	Yearly	14	8	78
	n =100	(14.0)	(8.0)	(78.0)
	Every 2 yrs.	7	0	13
	n = 20	(35.0)	(0.0)	(65.0)
	Every 3 yrs.	0	0	6
	n = 6	(0.0)	(0.0)	(100.0)

Table 6

Number of Concepts Taught by Grades 4 to 6 Teachers by How Often Nutrition Education Should be Taught

Year Concept Taught	Frequency of Teaching Nutrition	Number of Concepts Taught 0	1	2
1976/77	Monthly	0	2	1
	n = 3	(0.0)	(66.7)	(33.3)
	Yearly	0	0	8
	n = 8	(0.0)	(0.0)	(100.0)
	Every 2 yrs.	1	0	4
	n = 5	(20.0)	(0.0)	(80.0)
	Every 3 yrs.	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)
1977/78	Monthly	1	1	3
	n = 5	(20.0)	(20.0)	(60.0)
	Yearly	2	2	9
	n = 13	(15.4)	(15.4)	(69.2)
	Every 2 yrs.	3	0	6
	n = 9	(33.3)	(0.0)	(66.7)
	Every 3 yrs.	1	0	1
	n = 2	(50.0)	(0.0)	(50.0)
1978/79	Monthly	4	1	2
	n = 7	(57.1)	(14.3)	(28.6)
	Yearly	5	2	17
	n = 24	(20.8)	(8.3)	(70.9)
	Every 2 yrs.	4	0	13
	n = 17	(23.5)	(0.0)	(76.5)
	Every 3 yrs.	1	0	1
	n = 2	(50.0)	(0.0)	(50.0)
1979/80	Monthly	7	0	13
	n = 20	(35.0)	(0.0)	(65.0)
	Yearly	8	3	39
	n = 50	(16.0)	(6.0)	(78.0)
	Every 2 yrs.	11	1	11
	n = 23	(47.8)	(4.4)	(47.8)
	Every 3 yrs.	1	0	4
	n = 5	(20.0)	(0.0)	(80.0)

between those who taught no concepts, one concept or two concepts. In 1978/79 and 1979/80, the highest percentage of teachers implementing one or more concepts felt nutrition education was of moderate importance and should be taught yearly. According to our criteria, there was no identifiable pattern evident so the hypothesis was not supported.

Hypothesis 4. Teachers in urban schools will implement more concepts than teachers in rural schools.

In Table 7, a definite trend was evident for grades K to 3 teachers. In all years, a higher percentage of rural teachers implemented one or more concepts compared to urban teachers. Clearly, the hypothesis was not supported by the identified pattern.

In contrast, Table 8 for grades 4 to 6 teachers did not indicate a definite trend. However, there was some effect of urban/rural location. Excluding 1979/80, a higher percentage of urban teachers implemented one or more concepts relative to rural teachers. Considering the criteria established, there was no identifiable pattern to support the hypothesis.

Hypothesis 5. Teachers in schools with lower enrolments will implement more concepts than teachers in schools with higher enrolments.

For grades K to 3 teachers (Table 9), there was no identifiable pattern evident. In 1978/79, the highest percentage of teachers implementing one or more concepts taught in large schools (exceeding 400 students). However, based on the criteria established, there was no identifiable pattern evident to allow support of the hypothesis.

For grades 4 to 6 teachers, an identifiable trend was evident in Table 10. In all years, the highest percentage of grades 4 to 6 teachers

Table 7

Number of Concepts Taught by Grades K to 3 Teachers by School Location

Year Concept Taught	Location	Number of Concepts Taught 0	1	2
1976/77	Calgary	2	0	6
	n = 8	(25.0)	(0.0)	(75.0)
	Edmonton	0	1	3
	n = 4	(0.0)	(25.0)	(75.0)
	Urban	2	1	9
	n = 12	(16.7)	(8.3)	(75.0)
	Rural	1	1	26
	n = 28	(3.6)	(3.6)	(92.8)
1977/78	Calgary	3	0	7
	n = 10	(30.0)	(0.0)	(70.0)
	Edmonton	1	0	5
	n = 6	(16.7)	(0.0)	(83.3)
	Urban	4	0	12
	n = 16	(25.0)	(0.0)	(75.0)
	Rural	4	2	38
	n = 44	(9.1)	(4.5)	(86.4)
1978/79	Calgary	4	0	11
	n = 15	(26.7)	(0.0)	(73.3)
	Edmonton	1	0	6
	n = 7	(14.3)	(0.0)	(85.7)
	Urban	5	0	17
	n = 22	(22.7)	(0.0)	(77.3)
	Rural	10	4	61
	n = 75	(13.3)	(5.3)	(81.3)
1979/80	Calgary	7	0	19
	n = 26	(26.9)	(0.0)	(73.1)
	Edmonton	2	0	9
	n = 11	(18.2)	(0.0)	(81.8)
	Urban	9	0	28
	n = 37	(24.3)	(0.0)	(75.7)
	Rural	20	12	96
	n = 128	(15.6)	(9.4)	(75.0)

Note. Urban is composed of the sum of Calgary and Edmonton statistics.

Table 8

Number of Concepts Taught by Grades 4 to 6 Teachers by School Location

Year Concept Taught	Location	Number of Concepts Taught 0	1	2
1976/77	Calgary	0	0	0
	n = 0	(0.0)	(0.0)	(0.0)
	Edmonton	0	1	2
	n = 3	(0.0)	(33.3)	(66.7)
	Urban	0	1	2
	n = 4	(0.0)	(33.3)	(66.7)
	Rural	1	1	14
	n = 16	(6.4)	(6.4)	(87.4)
1977/78	Calgary	0	0	1
	n = 1	(0.0)	(0.0)	(100.0)
	Edmonton	0	1	4
	n = 4	(0.0)	(25.0)	(75.0)
	Urban	0	1	4
	n = 5	(0.0)	(20.0)	(80.0)
	Rural	7	2	18
	n = 27	(25.9)	(7.4)	(66.7)
1978/79	Calgary	1	0	4
	n = 5	(20.0)	(0.0)	(80.0)
	Edmonton	2	1	3
	n = 6	(33.3)	(16.7)	(50.0)
	Urban	3	1	7
	n = 11	(27.3)	(9.1)	(63.6)
	Rural	13	2	28
	n = 43	(30.2)	(4.7)	(65.1)
1979/80	Calgary	4	1	9
	n = 14	(28.6)	(7.1)	(64.3)
	Edmonton	3	0	6
	n = 9	(33.3)	(0.0)	(66.7)
	Urban	7	1	15
	n = 23	(30.4)	(4.4)	(65.2)
	Rural	21	3	55
	n = 79	(26.6)	(3.8)	(69.6)

Note. Urban is composed of the sum of Calgary and Edmonton statistics.

Table 9

Number of Concepts Taught by Grades K to 3 Teachers
by School Enrolment

Year Concept Taught	Number of Students	Number of Concepts Taught 0	1	2
1976/77	0 - 200	0	1	9
	n = 10	(0.0)	(10.0)	(90.0)
	201 - 400	1	1	14
	n = 16	(6.3)	(6.3)	(87.4)
	401 +	1	0	11
	n = 12	(8.3)	(0.0)	(91.7)
1977/78	0 - 200	3	0	15
	n = 18	(16.7)	(0.0)	(83.3)
	201 - 400	2	1	19
	n = 22	(9.1)	(4.5)	(86.4)
	401 +	2	1	15
	n = 18	(11.1)	(5.6)	(83.3)
1978/79	0 - 200	6	1	19
	n = 26	(23.1)	(3.8)	(73.1)
	201 - 400	4	3	30
	n = 37	(10.8)	(8.1)	(81.1)
	401 +	2	1	27
	n = 30	(6.7)	(3.3)	(90.0)
1979/80	0 - 200	7	2	41
	n = 50	(14.0)	(4.0)	(82.0)
	201 - 400	11	6	39
	n = 56	(19.6)	(10.7)	(69.7)
	401 +	7	4	42
	n = 53	(13.2)	(7.5)	(79.3)

Table 10

Number of Concepts Taught by Grades 4 to 6 Teachers
by School Enrolment

Year Concept Taught	Number of Students	Number of Concepts Taught 0	1	2
1976/77	0 - 200	1	1	5
	n = 7	(14.3)	(14.3)	(71.4)
	201 - 400	0	0	3
	n = 3	(0.0)	(0.0)	(100.0)
	401 +	0	1	8
	n = 9	(0.0)	(11.1)	(88.9)
1977/78	0 - 200	3	2	7
	n = 12	(25.0)	(16.7)	(58.3)
	201 - 400	0	0	4
	n = 4	(0.0)	(0.0)	(100.0)
	401 +	4	2	11
	n = 17	(23.5)	(11.8)	(64.7)
1978/79	0 - 200	5	3	10
	n = 18	(27.8)	(16.7)	(55.5)
	201 - 400	1	0	14
	n = 15	(6.7)	(0.0)	(93.3)
	401 +	10	0	27
	n = 21	(47.6)	(0.0)	(52.4)
1979/80	0 - 200	9	1	21
	n = 31	(29.0)	(3.2)	(67.8)
	201 - 400	7	0	22
	n = 29	(24.1)	(0.0)	(75.9)
	401 +	12	2	27
	n = 41	(29.3)	(4.9)	(65.8)

implementing one or more concepts taught in mid-size schools (201 to 400 students). In order to support the hypothesis, the researcher expected this trend to apply to small schools (under 200 students). Therefore, the hypothesis was not supported by the pattern identified.

In summary, the findings indicated a general pattern that most teachers who implemented concepts taught two concepts. The importance of considering grades K to 3 and 4 to 6 teachers as separate groups was evident in the different trends that emerged. The main findings are presented for Question 1: Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of concepts implemented?

Hypothesis 1. Teachers who attend the Nutrition at School workshop will implement more concepts than teachers who do not attend the workshop.

Grades K to 3: For two of the four years, a higher percentage of workshop attenders implemented one or more concepts than non attenders.

Grades 4 to 6: There was either no percentage difference evident or a higher percentage of non attenders than attenders implemented one or more concepts.

Outcome: For both grades K to 3 and 4 to 6 teachers, there was no identifiable pattern to support the hypothesis.

Hypothesis 2. Teachers who are involved in the Nutrition at School program for two years will implement more concepts than teachers who are involved for one year.

Grades K to 3 and 4 to 6: The highest percentage of teachers who implemented one or more concepts were involved in the program for one year.

Outcome: For both grades K to 3 and 4 to 6 teachers, the hypothesis was not supported since the pattern was not in the predicted direction.

Hypothesis 3. Teachers who perceive nutrition education to be more important will implement more concepts than teachers who perceive nutrition education as less important.

Grades K to 3: In three out of four years, the highest percentage of teachers implementing one or more concepts indicated nutrition education was of moderate importance and should be taught yearly.

Grades 4 to 6: In two out of four years, the highest percentage of teachers implementing one or more concepts felt nutrition education was of moderate importance and should be taught yearly.

Outcome:

Grades K to 3: The identified pattern was in the opposite direction to that predicted so the hypothesis was not accepted.

Grades 4 to 6: There was no identifiable pattern evident so the hypothesis was not supported.

Hypothesis 4. Teachers in urban schools will implement more concepts than teachers in rural schools.

Grades K to 3: In all years, a higher percentage of rural teachers implemented one or more concepts compared to urban teachers.

Grades 4 to 6: Excluding 1979/80, a higher percentage of urban teachers implemented one or more concepts relative to rural teachers.

Outcome:

Grades K to 3: The hypothesis was not supported by the pattern identified.

Grades 4 to 6: There was no identifiable pattern evident so the hypothesis was not supported.

Hypothesis 5. Teachers in schools with lower enrolments will implement more concepts than teachers in schools with higher enrolments.

Grades K to 3: In 1978/79, the highest percentage of teachers implementing one or more concepts taught in large schools (exceeding 400 students).

Grades 4 to 6: In all years, the highest percentage of teachers implementing one or more concepts taught in mid-size schools (201 to 400 students).

Outcome:

Grades K to 3: There was no identifiable pattern evident to allow support of the hypothesis.

Grades 4 to 6: The hypothesis was not supported by the pattern identified.

Results Relating to Research Question 2

Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of teaching objectives achieved?

Hypothesis 1. Teachers who attend the Nutrition at School workshop will achieve more objectives than teachers who do not attend the workshop.

Table 11 indicated that over 60% of the grades K to 3 teachers, both attenders and non attenders at the workshop, achieved three or four objectives. In general, workshop attendance or non attendance did not clearly indicate whether teachers will achieve one or more objectives. However, in certain years, there was evidence that workshop attendance

Table 11

Number of Objectives Achieved by Grades K to 3 Teachers by Attendance at the Nutrition at School Workshop

Year Objectives Achieved	Workshop Attendance	Number of Objectives Achieved 0	1	2	3	4
1976/77	Didn't Attend n = 3	0 (0.0)	0 (0.0)	0 (0.0)	1 (33.3)	2 (66.7)
	Did Attend n = 13	0 (0.0)	0 (0.0)	1 (7.7)	2 (15.4)	10 (76.9)
1977/78	Didn't Attend n = 8	2 (25.0)	1 (12.5)	0 (0.0)	1 (12.5)	4 (50.0)
	Did Attend n = 27	1 (3.7)	1 (3.7)	3 (11.1)	5 (18.5)	17 (63.0)
1978/79	Didn't Attend n = 12	2 (16.7)	0 (0.0)	1 (8.3)	3 (25.0)	6 (50.0)
	Did Attend n = 68	8 (11.8)	3 (4.4)	6 (8.8)	12 (17.6)	39 (57.4)
1979/80	Didn't Attend n = 20	4 (20.0)	2 (10.0)	1 (5.0)	3 (15.0)	10 (50.0)
	Did Attend n = 129	19 (14.7)	4 (3.1)	6 (4.7)	22 (17.0)	78 (60.5)

had some impact. In 1977/78, 21% more workshop attenders achieved one or more objectives compared to non attenders. Minimal impact of the workshop was evident in 1978/79 and 1979/80. Approximately 5% more attenders than non attenders taught one or more objectives. A lack of impact in 1976/77 was indicated by no difference between the percentage of attenders and non attenders achieving one or more objectives. There was no identifiable trend apparent so the hypothesis was not supported.

For grades 4 to 6 teachers there was an identifiable trend overall (Table 12). Data from 1976/77 was excluded from this discussion due to the small cell size ($n_j = 1$) to avoid skewing the results. Thus, the decision rule became a 10% difference between categories in two out of three years for this case only. In 1978/79 and 1979/80 respectively, 23% and 19% more non attenders than attenders achieved one or more objectives. In 1977/78, the difference was in the opposite direction with 25% more attenders than non attenders achieving one or more objectives. According to the established criteria, the hypothesis was not supported since the pattern was in the opposite direction to that predicted.

Hypothesis 2. Teachers who are involved in the Nutrition at School program for two years will implement more objectives than teachers who are involved for one year.

In testing this hypothesis, teachers involved for three years in the program were excluded due to a small number of responses which would skew the results. Table 13, for grades K to 3, indicated a higher percentage of teachers involved for one year compared to two years achieved one or more objectives. In all years except 1976/77, an average of 15% more

Table 12

Number of Objectives Achieved by Grades 4 to 6 Teachers
by Attendance at the Nutrition at School Workshop

Year Objectives Achieved	Workshop Attendance	Number of Objectives Achieved 0	1	2	3	4
1976/77	Didn't Attend n = 1	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
	Did Attend n = 8	1 (12.5)	1 (12.5)	0 (0.0)	2 (25.0)	4 (50.0)
1977/78	Didn't Attend n = 4	2 (50.0)	0 (0.0)	1 (25.0)	1 (25.0)	0 (0.0)
	Did Attend n = 16	4 (25.0)	3 (18.8)	1 (6.2)	2 (12.5)	6 (37.5)
1978/79	Didn't Attend n = 7	1 (14.3)	1 (14.3)	1 (14.3)	2 (28.6)	2 (28.6)
	Did Attend n = 32	12 (37.5)	2 (6.3)	1 (3.1)	5 (15.6)	12 (37.5)
1979/80	Didn't Attend n = 13	2 (15.4)	0 (0.0)	2 (15.4)	4 (30.8)	5 (38.5)
	Did Attend n = 78	27 (34.6)	2 (2.6)	10 (12.8)	17 (21.8)	22 (28.2)

Table 13

Number of Objectives Achieved by Grades K to 3 Teachers by Number of Years of Teacher Involvement in the Nutrition at School Program

Year Objectives Achieved	Number of Years of Involvement	Number of Objectives Achieved 0	1	2	3	4
1976/77	1	1	1	1	2	9
	n = 14	(7.1)	(7.1)	(7.1)	(14.3)	(64.3)
	2	1	1	0	5	7
	n = 14	(7.1)	(7.1)	(0.0)	(35.7)	(50.0)
	3	0	0	0	0	1
	n = 1	(0.0)	(0.0)	(0.0)	(0.0)	(100.0)
1977/78	1	2	2	3	3	20
	n = 30	(6.7)	(6.7)	(10.0)	(10.0)	(66.6)
	2	4	2	0	4	8
	n = 18	(22.2)	(11.1)	(0.0)	(22.2)	(44.5)
	3	0	0	0	0	1
	n = 1	(0.0)	(0.0)	(0.0)	(0.0)	(100.0)
1978/79	1	7	4	4	16	36
	n = 67	(10.5)	(6.0)	(6.0)	(23.9)	(53.6)
	2	6	0	3	4	11
	n = 24	(25.0)	(0.0)	(12.5)	(16.7)	(45.8)
	3	0	0	0	0	1
	n = 1	(0.0)	(0.0)	(0.0)	(0.0)	(100.0)
1979/80	1	17	5	8	22	78
	n =130	(13.1)	(3.8)	(6.2)	(16.9)	(60.0)
	2	7	1	0	6	10
	n = 24	(29.2)	(4.2)	(0.9)	(25.0)	(41.6)
	3	0	0	0	0	1
	n = 1	(0.0)	(0.0)	(0.0)	(0.0)	(100.0)

teachers involved for one year achieved one or more objectives. However, in 1976/77, there was no difference between the percentage of teachers achieving objectives based on years of involvement in the program. The hypothesis was not supported. In fact, the pattern identified was in the opposite direction.

Similarly Table 14 for grades 4 to 6 indicated the highest percentage of teachers achieving one or more objectives were involved for one year in the program. In 1977/78 and 1978/79, 10% and 28% more teachers involved for one year taught one or more objectives in the respective years. Clearly the hypothesis was not supported.

Hypothesis 3. Teachers who perceive nutrition education to be more important will achieve more objectives than teachers who perceive nutrition education as less important.

In testing this hypothesis, teachers who indicated nutrition education should be taught every three years were excluded due to a small number of responses which would skew the results. The responses indicated nutrition education was either of high importance (should be taught monthly), moderate importance (taught yearly), or low importance (taught every 2 years).

Table 15 indicated over 60% of the grades K to 3 teachers achieved three or four objectives regardless of their attitude toward the importance of nutrition. The highest percentage of teachers achieving one or more objectives stated nutrition education should be taught yearly indicating an attitude of moderate importance was prevalent. Excluding 1977/78, the highest percentage of those teachers who taught no concepts indicated nutrition was of low importance and should be taught every two

Table 14

Number of Objectives Achieved by Grades 4 to 6 Teachers by Number of Years of Teacher Involvement in the Nutrition at School Program

Year Objectives Achieved	Number of Years of Involvement	Number of Objectives Achieved 0	1	2	3	4
1976/77	1	0	0	0	5	1
	n = 6	(0.0)	(0.0)	(0.0)	(83.3)	(16.7)
	2	0	1	0	1	3
	n = 8	(0.0)	(12.5)	(0.0)	(12.5)	(37.5)
	3	1	0	0	0	0
	n = 1	(100.0)	(0.0)	(0.0)	(0.0)	(0.0)
1977/78	1	4	2	2	1	5
	n = 15	(26.7)	(13.3)	(13.3)	(13.3)	(33.3)
	2	4	2	0	3	2
	n = 11	(36.3)	(18.2)	(0.0)	(27.3)	(18.2)
	3	0	1	0	0	0
	n = 1	(0.0)	(100.0)	(0.0)	(0.0)	(0.0)
1978/79	1	9	3	3	6	14
	n = 35	(25.7)	(8.6)	(8.6)	(17.1)	(40.0)
	2	7	0	0	4	2
	n = 13	(53.8)	(0.0)	(0.0)	(30.8)	(15.4)
	3	0	1	0	0	0
	n = 1	(0.0)	(100.0)	(0.0)	(0.0)	(0.0)
1979/80	1	25	2	12	20	23
	n = 82	(30.5)	(2.4)	(14.6)	(24.4)	(28.1)
	2	5	0	0	3	5
	n = 13	(38.5)	(0.0)	(0.0)	(23.0)	(38.5)
	3	1	0	0	0	0
	n = 1	(100.0)	(0.0)	(0.0)	(0.0)	(0.0)

Table 15

Number of Objectives Achieved by Grades K to 3 Teachers
by How Often Nutrition Education Should be Taught

Year Objectives Achieved	Frequency of Teaching Nutrition	Number of Objectives Achieved 0	1	2	3	4
1976/77	Monthly	1	0	0	2	5
	n = 8	(12.5)	(0.0)	(0.0)	(25.0)	(62.5)
	Yearly	0	2	0	3	10
	n = 15	(0.0)	(13.3)	(0.0)	(20.0)	(66.7)
	Every 2 yrs.	1	0	0	1	2
	n = 4	(25.0)	(0.0)	(0.0)	(25.0)	(50.0)
	Every 3 yrs.	0	0	1	2	1
	n = 4	(0.0)	(0.0)	(25.0)	(50.0)	(25.0)
1977/78	Monthly	3	1	0	1	5
	n = 10	(30.0)	(10.0)	(0.0)	(10.0)	(50.0)
	Yearly	1	2	2	5	20
	n = 30	(3.3)	(6.7)	(6.7)	(16.7)	(66.6)
	Every 2 yrs.	1	0	0	1	5
	n = 7	(14.3)	(0.0)	(0.0)	(14.3)	(71.4)
	Every 3 yrs.	2	1	1	0	1
	n = 5	(40.0)	(20.0)	(20.0)	(0.0)	(20.0)
1978/79	Monthly	3	0	1	4	13
	n = 21	(14.3)	(0.0)	(4.8)	(19.0)	(61.9)
	Yearly	4	3	3	15	27
	n = 52	(7.7)	(5.8)	(5.8)	(28.8)	(51.9)
	Every 2 yrs.	3	0	1	2	27
	n = 13	(23.1)	(0.0)	(7.7)	(15.4)	(53.8)
	Every 3 yrs.	2	1	1	0	1
	n = 5	(40.0)	(20.0)	(20.0)	(0.0)	(20.0)
1979/80	Monthly	5	0	2	6	22
	n = 35	(14.3)	(0.0)	(5.7)	(17.1)	(62.9)
	Yearly	10	4	5	19	55
	n = 93	(10.8)	(4.3)	(5.4)	(20.4)	(59.1)
	Every 2 yrs.	8	0	0	3	8
	n = 19	(42.1)	(0.0)	(0.0)	(15.8)	(42.1)
	Every 3 yrs.	0	1	1	1	3
	n = 6	(0.0)	(16.7)	(16.7)	(16.7)	(50.0)

years. However, the hypothesis was not supported by the pattern identified. The highest percentage of teachers achieving one or more objectives indicated nutrition education was of moderate importance (taught yearly) rather than of high importance (taught monthly).

For grades 4 to 6 teachers (Table 16) the highest percentage of teachers achieving one or more objectives indicated nutrition education was of moderate importance (taught yearly) or low importance (taught every 2 years). However, a clear pattern was not identified so the hypothesis was not supported.

Hypothesis 4. Teachers in urban schools will achieve more objectives than teachers in rural schools.

Table 17 for grades K to 3 indicated over 70% of the teachers achieved three or four objectives regardless of school location. There was no identifiable pattern evident. The highest percentage of teachers achieving one or more objectives indicated being in rural schools (1978/79 and 1979/80) and urban schools (1976/77). In 1977/78 there was essentially no percentage difference between teachers in urban or rural schools. Therefore, the hypothesis was not supported.

Similarly for grades 4 to 6 (Table 18), there was no identifiable pattern evident based on school location. There was no difference between the percentage of teachers achieving one or more objectives in rural and urban schools in 1976/77 and 1979/80. The highest percentage of teachers achieving one or more objectives were in rural schools (1977/78) and urban schools (1978/79). The hypothesis was not supported.

Hypothesis 5. Teachers in schools with lower enrolments will achieve more objectives than teachers in schools with higher enrolments.

Table 16

Number of Objectives Achieved by Grades 4 to 6 Teachers by How Often Nutrition Education Should be Taught

Year Objectives Achieved	Frequency of Teaching Nutrition	Number of Objectives Achieved 0	1	2	3	4
1976/77	Monthly	1	1	0	3	0
	n = 3	(33.3)	(33.3)	(0.0)	(33.3)	(0.0)
	Yearly	2	0	0	0	0
	n = 7	(28.6)	(0.0)	(0.0)	(0.0)	(71.4)
	Every 2 yrs.	1	0	0	2	0
	n = 3	(33.3)	(0.0)	(0.0)	(66.7)	(0.0)
	Every 3 yrs.	0	0	0	1	0
	n = 1	(0.0)	(0.0)	(0.0)	(100.0)	(0.0)
1977/78	Monthly	1	1	0	1	2
	n = 5	(20.0)	(20.0)	(0.0)	(20.0)	(40.0)
	Yearly	5	1	1	2	3
	n = 12	(41.7)	(8.3)	(8.3)	(16.7)	(25.0)
	Every 2 yrs.	1	2	1	1	2
	n = 7	(14.3)	(28.6)	(14.3)	(14.3)	(28.6)
	Every 3 yrs.	1	0	0	0	0
	n = 1	(100.0)	(0.0)	(0.0)	(0.0)	(0.0)
1978/79	Monthly	4	0	2	0	0
	n = 7	(57.1)	(0.0)	(28.6)	(0.0)	(0.0)
	Yearly	6	1	0	3	12
	n = 22	(27.3)	(4.5)	(0.0)	(13.6)	(54.6)
	Every 2 yrs.	4	2	1	6	3
	n = 16	(25.0)	(12.5)	(6.3)	(37.5)	(18.7)
	Every 3 yrs.	1	0	0	0	0
	n = 1	(100.0)	(0.0)	(0.0)	(0.0)	(0.0)
1979/80	Monthly	8	0	3	3	4
	n = 18	(44.4)	(0.0)	(16.7)	(16.7)	(22.2)
	Yearly	10	1	6	10	23
	n = 50	(20.0)	(2.0)	(12.0)	(20.0)	(46.0)
	Every 2 yrs.	11	1	2	5	1
	n = 20	(55.0)	(5.0)	(10.0)	(25.0)	(5.0)
	Every 3 yrs.	1	0	1	2	0
	n = 4	(25.0)	(0.0)	(25.0)	(50.7)	(0.0)

Table 17

Number of Objectives Achieved by Grades K to 3 Teachers by School Location

Year Objectives Achieved	Location	Number of Objectives Achieved 0	1	2	3	4
1976/77	Calgary	0	0	0	0	6
	n = 6	(0.0)	(0.0)	(0.0)	(0.0)	(100.0)
	Edmonton	0	0	0	1	3
	n = 4	(0.0)	(0.0)	(0.0)	(25.0)	(75.0)
	Urban	0	0	0	1	9
	n = 10	(0.0)	(0.0)	(0.0)	(10.0)	(90.0)
	Rural	2	2	1	7	10
	n = 22	(9.1)	(9.1)	(4.5)	(31.8)	(45.5)
1977/78	Calgary	1	1	1	0	6
	n = 9	(11.1)	(11.1)	(11.1)	(0.0)	(66.7)
	Edmonton	1	0	0	1	4
	n = 6	(16.7)	(0.0)	(0.0)	(16.7)	(66.7)
	Urban	2	1	1	1	10
	n = 15	(13.3)	(6.7)	(6.7)	(6.7)	(66.6)
	Rural	5	4	2	5	21
	n = 37	(13.5)	(10.8)	(5.4)	(13.5)	(56.8)
1978/79	Calgary	4	0	1	2	8
	n = 15	(19.0)	(0.0)	(6.7)	(13.3)	(53.3)
	Edmonton	0	0	2	1	3
	n = 6	(0.0)	(0.0)	(33.3)	(16.7)	(50.0)
	Urban	4	0	3	3	11
	n = 21	(19.0)	(0.0)	(14.3)	(14.3)	(52.4)
	Rural	9	3	4	18	37
	n = 71	(12.7)	(4.2)	(5.6)	(25.4)	(52.1)
1979/80	Calgary	8	0	1	2	14
	n = 25	(32.0)	(0.0)	(4.0)	(8.0)	(56.0)
	Edmonton	1	1	1	1	7
	n = 11	(9.1)	(9.1)	(9.1)	(9.1)	(63.6)
	Urban	9	1	2	3	21
	n = 36	(25.0)	(2.8)	(5.6)	(8.3)	(58.3)
	Rural	15	5	6	26	68
	n = 120	(12.5)	(4.2)	(5.0)	(21.7)	(56.6)

Note. Urban is composed of the sum of Calgary and Edmonton statistics.

Table 18

Number of Objectives Achieved by Grades 4 to 6 Teachers by School Location

Year Objectives Achieved	Location	Number of Objectives Achieved 0	1	2	3	4
1976/77	Calgary	0	0	0	0	0
	n = 0	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
	Edmonton	0	1	0	0	1
	n = 2	(0.0)	(50.0)	(0.0)	(0.0)	(50.0)
	Urban	0	1	0	0	1
	n = 2	(0.0)	(50.0)	(0.0)	(0.0)	(50.0)
	Rural	0	0	0	6	4
	n = 10	(0.0)	(0.0)	(0.0)	(60.0)	(40.0)
1977/78	Calgary	1	0	0	0	0
	n = 1	(100.0)	(0.0)	(0.0)	(0.0)	(0.0)
	Edmonton	1	2	0	0	1
	n = 4	(25.0)	(50.0)	(0.0)	(0.0)	(25.0)
	Urban	2	2	0	0	1
	n = 5	(40.0)	(40.7)	(0.0)	(0.0)	(20.0)
	Rural	6	3	2	5	7
	n = 23	(26.1)	(13.0)	(8.7)	(21.7)	(30.4)
1978/79	Calgary	1	0	0	2	2
	n = 5	(20.0)	(0.0)	(0.0)	(40.0)	(40.0)
	Edmonton	1	1	0	0	3
	n = 5	(20.0)	(10.0)	(0.0)	(0.0)	(60.0)
	Urban	2	1	0	2	5
	n = 10	(20.0)	(10.0)	(0.0)	(20.0)	(50.0)
	Rural	14	2	3	8	12
	n = 39	(35.9)	(5.1)	(7.7)	(20.5)	(30.8)
1979/80	Calgary	4	0	1	5	4
	n = 14	(28.6)	(0.0)	(7.1)	(35.7)	(28.6)
	Edmonton	3	0	0	2	2
	n = 7	(42.8)	(0.0)	(0.0)	(28.6)	(28.6)
	Urban	7	0	1	7	6
	n = 21	(33.3)	(0.0)	(4.8)	(33.3)	(28.6)
	Rural	24	2	11	15	23
	n = 75	(32.0)	(2.7)	(14.7)	(20.0)	(30.6)

Note. Urban is composed of the sum of Calgary and Edmonton statistics.

For teachers of grades K to 3, Table 19 indicated the lack of a clear pattern. The highest percentage of teachers achieving one or more objectives taught in small schools (under 200 students) in 1976/77, in mid-size schools (201 to 400 students) in 1977/78, and in large schools (exceeding 400 students) in 1978/79. There was essentially no difference between the percentage of teachers achieving one or more objectives in small and large schools in 1979/80. The hypothesis was not supported since an identifiable pattern was not evident.

In Table 20 for grades 4 to 6, an identifiable pattern was clear. In three years the highest percentage of teachers achieving one or more objectives taught in mid-size schools (201 to 400 students). In 1979/80, more teachers achieving one or more objectives taught in large schools (over 400 students). This trend indicated lack of support for the hypothesis since the investigator expected the highest percentage of teachers achieving one or more objectives to be in small schools.

In summary the main findings are presented for Question 2: Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of teaching objectives achieved?

Hypothesis 1. Teachers who attend the Nutrition at School workshop will achieve more objectives than teachers who do not attend the workshop.

Grades K to 3: In 1977/78, 21% more attenders than non attenders achieved one or more objectives.

Grades 4 to 6: In two out of three years, a higher percentage of non attenders than attenders achieved one or more objectives.

Outcome:

Grades K to 3: There was no identifiable pattern to support the hypothesis.

Table 19

Number of Objectives Achieved by Grades K to 3 Teachers
by School Enrolment

Year Objectives Achieved	Number of Students	Number of Objectives Achieved 0	1	2	3	4
1976/77	0 - 200	0	0	0	2	6
	n = 8	(0.0)	(0.0)	(0.0)	(25.0)	(75.0)
	201 - 400	1	2	1	4	5
	n = 13	(7.7)	(15.4)	(7.7)	(30.8)	(38.4)
	400 +	1	0	0	1	7
	n = 9	(11.1)	(0.0)	(0.0)	(11.1)	(77.8)
1977/78	0 - 200	3	1	0	1	11
	n = 16	(18.7)	(6.3)	(0.0)	(6.3)	(68.7)
	201 - 400	2	3	1	5	8
	n = 19	(10.5)	(15.8)	(5.3)	(26.3)	(42.1)
	400 +	2	0	2	1	10
	n = 15	(13.3)	(0.0)	(13.3)	(6.7)	(66.7)
1978/79	0 - 200	5	1	3	5	10
	n = 24	(20.8)	(4.2)	(12.5)	(20.8)	(41.7)
	201 - 400	4	2	3	8	20
	n = 37	(10.8)	(5.4)	(8.1)	(21.6)	(54.1)
	400 +	2	1	1	8	17
	n = 24	(6.9)	(3.4)	(3.4)	(27.6)	(58.7)
1979/80	0 - 200	5	3	1	8	28
	n = 45	(11.1)	(6.7)	(2.2)	(17.8)	(62.2)
	201 - 400	11	1	4	10	30
	n = 56	(19.6)	(1.8)	(7.1)	(17.9)	(53.6)
	400 +	6	2	3	10	28
	n = 49	(12.2)	(4.1)	(6.1)	(20.4)	(57.2)

Table 20

Number of Objectives Achieved by Grades 4 to 6 Teachers
by School Enrolment

Year Objectives Achieved	Number of Students	Number of Objectives Achieved 0	1	2	3	4
1976/77	0 - 200	3	0	0	1	0
	n = 4	(75.0)	(0.0)	(0.0)	(25.0)	(0.0)
	201 - 400	0	0	0	1	1
	n = 2	(0.0)	(0.0)	(0.0)	(50.0)	(50.0)
	400 +	1	1	0	3	4
	n = 9	(11.1)	(11.1)	(0.0)	(33.3)	(44.5)
1977/78	0 - 200	3	2	0	3	1
	n = 9	(33.3)	(22.2)	(0.0)	(33.3)	(11.2)
	201 - 400	0	1	0	0	2
	n = 3	(0.0)	(33.3)	(0.0)	(0.0)	(66.7)
	400 +	5	2	2	1	5
	n = 15	(33.3)	(13.3)	(13.3)	(6.8)	(33.3)
1978/79	0 - 200	5	0	2	4	5
	n = 16	(31.3)	(0.0)	(12.4)	(25.0)	(31.3)
	201 - 400	2	0	1	4	7
	n = 14	(14.3)	(0.0)	(7.1)	(28.6)	(50.0)
	400 +	9	3	0	2	5
	n = 19	(47.4)	(15.8)	(0.0)	(10.5)	(26.3)
1979/80	0 - 200	10	0	5	5	10
	n = 30	(33.3)	(0.0)	(16.7)	(16.7)	(33.3)
	201 - 400	9	0	4	5	8
	n = 26	(34.6)	(0.0)	(15.4)	(19.2)	(30.8)
	400 +	12	2	3	12	11
	n = 40	(30.0)	(5.0)	(7.5)	(30.0)	(27.5)

Grades 4 to 6: The hypothesis was not supported since the pattern identified was in the opposite direction to that predicted.

Hypothesis 2. Teachers who are involved in the Nutrition at School program for two years will implement more objectives than teachers who are involved for one year.

Grades K to 3 and 4 to 6: The highest percentage of teachers who achieved one or more objectives were involved in the program for one year.

Outcome: For both grades K to 3 and 4 to 6, the hypothesis was not supported by the pattern identified.

Hypothesis 3. Teachers who perceive nutrition education to be more important will achieve more objectives than teachers perceiving nutrition education as less important.

Grades K to 3: The highest percentage of teachers achieving one or more objectives indicated nutrition education was of moderate importance and should be taught yearly.

Grades 4 to 6: The highest percentage of teachers achieving one or more objectives indicated nutrition education was of moderate or low importance.

Outcome:

Grades K to 3: The pattern identified did not support the hypothesis.

Grades 4 to 6: There was no identifiable pattern to support the hypothesis.

Hypothesis 4. Teachers in urban schools will achieve more objectives than teachers in rural schools.

Grades K to 3 and 4 to 6: There was no identifiable pattern evident.

Outcome:

Grades K to 3 and 4 to 6: There was no identifiable pattern to support the hypothesis.

Hypothesis 5. Teachers in schools with lower enrolments will achieve more objectives than teachers in schools with higher enrolments.

Grades K to 3: The highest percentage of teachers achieving one or more objectives taught in small schools (1976/77), mid-size schools (1977/78), and in large schools (1978/79).

Grades 4 to 6: In three out of four years, the highest percentage of teachers achieving one or more objectives taught in mid-size schools.

Outcome:

Grades K to 3: There was no identifiable pattern so the hypothesis was not supported.

Grades 4 to 6: The hypothesis was not supported since the trend was in the opposite direction to that predicted.

Results Relating to Research Question 3

Question 3. Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of resource materials used?

Hypothesis 1. Teachers who attend the Nutrition at School workshop will use more resource materials than teachers who do not attend the workshop.

This hypothesis was tested by comparing high and low usage of workshop resource materials by attenders and non attenders. The hypothesis suggested that a higher percentage of attenders than non

attenders at the workshop would use a higher number of materials. Also, the researcher expected a higher percentage of non attenders than attenders to use a low number of materials.

For grades K to 3 (Table 21), high usage of materials was indicated for an average of 32% more attenders than non attenders. Low usage of materials was indicated for an average of 29% more non attenders than attenders. The average percentage use of materials across four years by attenders and non attenders confirmed this pattern. The hypothesis was supported.

For grades 4 to 6 (Table 22) there was no identifiable pattern. In 1978/79 and 1979/80, 3% and 12% more attenders than non attenders used a low number of materials. The highest percentage of teachers indicating high usage of materials were attenders (1977/78 and 1979/80) and non attenders (1976/77 and 1978/79). Since no identifiable pattern was evident, the hypothesis was not supported.

Hypothesis 2. Teachers who are involved in the Nutrition at School program for two years will use more resource materials than teachers who are involved for one year.

For grades K to 3 (Table 23), there was no difference in the usage of materials by teachers with either one or two years of involvement. For low usage of materials, the highest percentage of teachers were involved for one year (1976/77 and 1977/78) or two years (1978/79 and 1979/80). High usage of materials was indicated by a higher percentage of teachers involved for one year than two years. However, using the criteria established a trend was not evident. The four year average

Table 21

Number of Materials Used by Grades K to 3 Teachers by Attendance at the Nutrition at School Workshop

Year Materials Used	Workshop Attendance	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8)
1976/77	Didn't Attend n = 2	0 (0.0)	1 (50.0)	1 (50.0)
	Did Attend n = 8	1 (12.5)	3 (37.5)	4 (50.0)
1977/78	Didn't Attend n = 9	2 (50.0)	1 (25.0)	1 (25.0)
	Did Attend n = 4	4 (25.1)	1 (6.3)	11 (68.6)
1978/79	Didn't Attend n = 8	4 (50.0)	1 (12.5)	3 (37.5)
	Did Attend n = 43	10 (23.4)	8 (18.6)	25 (58.0)
1979/80	Didn't Attend n = 9	5 (55.6)	2 (22.2)	2 (22.2)
	Did Attend n = 89	17 (19.1)	24 (27.0)	48 (53.9)

Table 22

Number of Materials Used by Grades 4 to 6 Teachers by Attendance at the Nutrition at School Workshop

Year Materials Used	Workshop Attendance	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8,9)
1976/77	Didn't Attend n = 3	1 (33.0)	0 (0.0)	2 (66.7)
	Did Attend n = 4	2 (50.0)	1 (25.0)	1 (25.0)
1977/78	Didn't Attend n = 3	2 (66.6)	1 (33.3)	0 (0.0)
	Did Attend n = 12	6 (50.0)	0 (0.0)	6 (50.0)
1978/79	Didn't Attend n = 7	3 (42.9)	2 (28.6)	2 (28.6)
	Did Attend n = 22	10 (45.5)	6 (27.2)	6 (27.3)
1979/80	Didn't Attend n = 11	4 (36.3)	3 (27.3)	4 (36.4)
	Did Attend n = 52	25 (48.0)	7 (13.5)	20 (38.5)

Table 23

Number of Materials Used by Grades K to 3 Teachers
by Number of Years of Involvement in the
Nutrition at School Program

Year Materials Used	Number of Years of Involvement	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8)
1976/77	1 n = 11	4 (36.4)	4 (36.4)	3 (27.3)
	2 n = 9	2 (22.2)	5 (55.5)	2 (22.2)
1977/78	1 n = 25	11 (44.0)	6 (24.0)	8 (32.0)
	2 n = 11	3 (27.3)	3 (27.3)	5 (45.4)
1978/79	1 n = 52	16 (30.8)	13 (25.0)	23 (44.2)
	2 n = 16	6 (37.5)	4 (25.0)	6 (37.5)
1979/80	1 n = 98	17 (17.3)	32 (32.6)	49 (50.0)
	2 n = 15	8 (53.3)	1 (6.7)	6 (40.0)

percentage indicated a minimal difference (1% to 3%) between those teachers involved for one or two years and their relative use of materials. The hypothesis was not supported since there was no identifiable trend.

Table 24 for grades 4 to 6 did not indicate an identifiable pattern. Low users of materials indicated either one year or two years of involvement in the program. The four year average percentage indicated 8% more low users of materials were involved for two years rather than one year. Four percent more high users of materials were involved for one year compared to two years. The criteria for identifying a trend were not met. The hypothesis was not supported.

Hypothesis 3. Teachers who perceive nutrition education to be more important will use more resource materials than teachers who perceive nutrition education as less important.

The hypothesis suggested that teachers who indicated high usage of materials felt nutrition education was of high importance (taught monthly). Table 25 for grades K to 3 did not identify a trend. For high usage of materials, the highest percentage of teachers stated nutrition education was of high importance (1978/79), moderate importance (1979/80) or low importance (1976/77 and 1977/78). Low users of materials indicated nutrition education was of high importance (1976/77 and 1977/78) and low importance (1978/79 and 1979/80). The hypothesis was not accepted.

Similarly for grades 4 to 6 (Table 26) there was no identifiable pattern. The hypothesis was not supported.

Table 24

Number of Materials Used by Grades 4 to 6 Teachers by Number of Years of Involvement in the Nutrition at School Program

Year Materials Used	Number of Years of Involvement	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8,9)
1976/77	1 n = 7	4 (57.1)	2 (28.6)	1 (14.3)
	2 n = 6	2 (33.3)	3 (50.0)	1 (16.7)
1977/78	1 n = 16	7 (43.7)	4 (25.0)	5 (31.3)
	2 n = 6	5 (83.4)	1 (16.7)	0 (0.0)
1978/79	1 n = 31	13 (41.9)	11 (35.5)	7 (22.6)
	2 n = 9	6 (66.7)	1 (11.1)	2 (22.2)
1979/80	1 n = 57	25 (43.9)	11 (19.3)	21 (36.8)
	2 n = 8	3 (37.5)	1 (12.5)	4 (50.0)

Table 25

Number of Materials Used by Grades K to 3 Teachers
by How Often Nutrition Education Should Be Taught

Year Materials Used	Frequency of Teaching Nutrition	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8)
1976/77	Monthly	3	1	1
	n = 5	(60.0)	(20.0)	(20.0)
	Yearly	5	5	3
	n = 13	(38.5)	(38.5)	(23.1)
	Every 2 yrs.	1	0	2
	n = 3	(33.3)	(0.0)	(66.6)
1977/78	Monthly	5	1	0
	n = 6	(83.3)	(16.7)	(0.0)
	Yearly	8	7	9
	n = 24	(33.3)	(29.1)	(37.6)
	Every 2 yrs.	1	0	3
	n = 4	(25.0)	(0.0)	(75.0)
1978/79	Monthly	5	3	9
	n = 17	(29.5)	(17.7)	(52.8)
	Yearly	12	12	17
	n = 41	(29.3)	(29.3)	(41.4)
	Every 2 yrs.	4	2	3
	n = 9	(44.4)	(22.2)	(33.3)
1979/80	Monthly	5	13	10
	n = 38	(17.9)	(46.4)	(35.7)
	Yearly	14	17	37
	n = 68	(20.6)	(25.0)	(53.6)
	Every 2 yrs.	5	3	4
	n = 12	(41.7)	(24.9)	(33.3)

Table 26

Number of Materials Used by Grades 4 to 6 Teachers
by How Often Nutrition Education Should Be Taught

Year Materials Used	Frequency of Teaching Nutrition	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8,9)
1976/77	Monthly	2	1	0
	n = 3	(66.7)	(33.3)	(0.0)
	Yearly	3	3	2
	n = 8	(37.5)	(37.5)	(25.0)
	Every 2 yrs.	0	1	1
	n = 2	(0.0)	(50.0)	(50.0)
1977/78	Monthly	2	1	2
	n = 5	(40.0)	(20.0)	(40.0)
	Yearly	8	2	2
	n = 12	(66.7)	(16.7)	(16.7)
	Every 2 yrs.	2	2	2
	n = 6	(33.3)	(33.3)	(33.3)
1978/79	Monthly	4	2	0
	n = 6	(66.6)	(33.4)	(0.0)
	Yearly	11	4	4
	n = 19	(58.0)	(21.0)	(21.0)
	Every 2 yrs.	4	5	5
	n = 14	(28.6)	(35.7)	(35.7)
1979/80	Monthly	5	2	7
	n = 14	(35.7)	(14.2)	(50.1)
	Yearly	12	5	13
	n = 30	(39.9)	(16.6)	(43.5)
	Every 2 yrs.	9	5	4
	n = 18	(49.9)	(27.7)	(22.4)

Hypothesis 4. Teachers in urban schools will use more resource materials than teachers in rural schools.

The hypothesis suggested a greater percentage of teachers in urban schools would indicate a higher usage of materials. Table 27 for grades K to 3 indicated a trend which did not support the hypothesis. For three out of four years, the highest percentage of teachers indicating low usage of materials were in urban schools. The four year average percentage of material usage indicated 20% more urban teachers than rural used lower numbers of materials. Fifteen percent more rural than urban teachers used a moderate number of materials. The criteria established to identify a trend were met. The hypothesis was not supported. In fact, the pattern identified was in the opposite direction than predicted.

For grades 4 to 6 (Table 28) an identifiable pattern was not evident comparing within years. The four year average percentage indicated low usage of materials by 18% more teachers in urban than rural schools. Thirteen percent more teachers in rural than urban schools used a moderate number of materials. Five percent more rural teachers used a high number of materials. In general, the hypothesis was not supported.

Hypothesis 5. Teachers in schools with higher enrolments will use more resource materials than teachers in schools with lower enrolments.

For grades K to 3 (Table 29) there was no identifiable pattern evident that teachers in a certain size of school used more or less resource materials. The four year average percentage confirmed the lack of a pattern. The hypothesis was not supported.

Table 27

Number of Materials Used by Grades K to 3 Teachers
by School Location

Year Materials Used	Location	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8)
1976/77	Urban n = 7	4 (57.1)	1 (14.3)	2 (28.6)
	Rural n = 18	4 (22.2)	10 (55.6)	4 (22.2)
1977/78	Urban n = 9	6 (66.7)	0 (0.0)	3 (33.3)
	Rural n = 28	9 (32.1)	9 (32.1)	10 (35.8)
1978/79	Urban n = 14	6 (43.0)	3 (21.3)	5 (35.7)
	Rural n = 57	17 (29.9)	16 (28.1)	24 (42.0)
1979/80	Urban n = 25	5 (20.0)	11 (44.0)	9 (36.0)
	Rural n = 90	21 (23.3)	23 (25.6)	46 (51.1)

Note. Urban is composed of the sum of Calgary and Edmonton statistics.

Table 28

Number of Materials Used by Grades 4 to 6 Teachers
by School Location

Year Materials Used	Location	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8,9)
1976/77	Urban n = 1	1 (100.0)	0 (0.0)	0 (0.0)
	Rural n = 14	6 (42.9)	5 (35.7)	3 (21.4)
1977/78	Urban n = 2	2 (100.0)	0 (0.0)	0 (0.0)
	Rural n = 22	12 (54.6)	4 (18.2)	6 (27.2)
1978/79	Urban n = 5	2 (40.0)	1 (20.0)	2 (40.0)
	Rural n = 35	18 (51.3)	9 (25.8)	8 (22.9)
1979/80	Urban n = 14	4 (28.7)	3 (21.4)	7 (49.9)
	Rural n = 51	24 (47.2)	8 (15.6)	19 (37.2)

Note. Urban is composed of the sum of Calgary and Edmonton statistics.

Table 29

Number of Materials Used by Grades K to 3 Teachers
by School Enrolment

Year Materials Used	Number of Students	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8)
1976/77	0 - 200	4	2	2
	n = 8	(50.0)	(25.0)	(25.0)
	201 - 400	2	5	1
	n = 8	(25.0)	(62.5)	(12.5)
	401 +	2	2	3
	n = 7	(28.6)	(28.6)	(42.8)
1977/78	0 - 200	5	3	5
	n = 13	(38.5)	(23.0)	(38.5)
	201 - 400	4	4	5
	n = 13	(30.8)	(30.8)	(38.5)
	401 +	6	1	3
	n = 10	(60.0)	(10.0)	(30.0)
1978/79	0 - 200	7	3	7
	n = 17	(41.1)	(17.8)	(41.1)
	201 - 400	7	7	11
	n = 25	(28.0)	(28.0)	(44.0)
	401 +	6	4	11
	n = 21	(28.6)	(19.1)	(52.3)
1979/80	0 - 200	3	13	19
	n = 35	(8.6)	(37.2)	(54.2)
	201 - 400	10	10	20
	n = 40	(25.0)	(25.0)	(50.0)
	401 +	9	10	11
	n = 30	(30.0)	(33.3)	(36.7)

For grades 4 to 6 (Table 30) there was no identifiable pattern. The four year average percentage indicated 7% more teachers in small schools used a moderate number of resources. In some years, especially 1976/77, the number of responses was relatively small. The hypothesis was not supported.

In summary, the main findings are presented for Question 3: Is there an identifiable pattern evident between the selected elements of the teaching environment and the number of resource materials used?

Hypothesis 1. Teachers who attend the Nutrition at School workshop will use more resource materials than teachers who do not attend the workshop.

Grades K to 3: A higher percentage of attenders than non attenders indicated high usage of materials. A higher percentage of non attenders than attenders indicated low usage of materials.

Grades 4 to 6: The highest percentage of teachers indicating high usage of materials were attenders (1977/78 and 1979/80) and non attenders (1976/77 and 1978/79).

Outcome:

Grades K to 3: The pattern supported the hypothesis.

Grades 4 to 6: There was no identifiable pattern so the hypothesis was not supported.

Hypothesis 2. Teachers who are involved in the Nutrition at School program for two years will use more resource materials than teachers who are involved for one year.

Grades K to 3 and 4 to 6: Low users of materials indicated having either one or two years of involvement in the program.

Table 30

Number of Materials Used by Grades 4 to 6 Teachers
by School Enrolment

Year Materials Used	Number of Students	Number of Materials Used Low (0,1,2)	Medium (3,4,5)	High (6,7,8,9)
1976/77	0 - 200	3	3	0
	n = 6	(50.0)	(50.0)	(0.0)
	201 - 400	2	1	1
	n = 4	(50.0)	(25.0)	(25.0)
	401 +	2	1	2
	n = 5	(40.0)	(20.0)	(40.0)
1977/78	0 - 200	4	2	2
	n = 8	(50.0)	(25.0)	(25.0)
	201 - 400	3	1	1
	n = 5	(60.0)	(20.0)	(20.0)
	401 +	6	1	3
	n = 10	(60.0)	(10.0)	(30.0)
1978/79	0 - 200	6	4	4
	n = 14	(42.8)	(28.6)	(28.6)
	201 - 400	6	3	3
	n = 11	(45.4)	(27.3)	(27.3)
	401 +	7	3	3
	n = 13	(53.8)	(23.1)	(23.1)
1979/80	0 - 200	10	2	7
	n = 19	(52.6)	(10.5)	(36.9)
	201 - 400	7	2	6
	n = 15	(46.6)	(13.4)	(40.0)
	401 +	11	6	10
	n = 27	(40.7)	(22.3)	(37.0)

Outcome:

Grades K to 3 and 4 to 6: Since there was no identifiable trend, the hypothesis was not supported.

Hypothesis 3. Teachers who perceive nutrition education to be more important will use more resource materials than teachers perceiving nutrition education as less important.

Grades K to 3 and 4 to 6: There was no identifiable trend.

Outcome:

Grades K to 3 and 4 to 6: The hypothesis was not supported since there was no identifiable pattern.

Hypothesis 4. Teachers in urban schools will use more resource materials than teachers in rural schools.

Grades K to 3 and 4 to 6: A higher percentage of teachers in rural schools compared to urban indicated higher usage of materials.

Outcome:

Grades K to 3 and 4 to 6: The hypothesis was not supported. In fact, the pattern was in the opposite direction than predicted.

Hypothesis 5. Teachers in schools with higher enrolments use more resource materials than teachers in schools with lower enrolments.

Grades K to 3 and 4 to 6: An identifiable pattern is not evident.

Outcome:

Grades K to 3 and 4 to 6: The hypothesis was not supported.

Results Relating to Research Question 4

Question 4. Is there an identifiable pattern evident between the selected elements of the teaching environment and the teacher's evaluation of effectiveness of resource materials?

Hypothesis 1. Teachers who attend the Nutrition at School workshop will evaluate the resource materials as more effective than teachers who do not attend the workshop.

This hypothesis was tested by comparing the percentage of attenders and non attenders who rated the effectiveness of resource materials (low effectiveness, moderately effective, highly effective).

Table 31 for grades K to 3 indicated approximately 75% of attenders and non attenders rated materials as highly effective. Approximately 20% of both groups indicated materials were moderately effective. A slightly higher percentage of attenders than non attenders rated materials as having low effectiveness. There was no identifiable pattern in the perceived effectiveness of resource materials by attenders and non attenders. Therefore, the hypothesis was not supported.

For grades 4 to 6 (Table 32) approximately 2% more non attenders than attenders ranked the materials as highly effective. Three percent more attenders ranked materials as moderately effective. There was no difference between attenders and non attenders on ranking effectiveness of materials. The hypothesis was not supported.

Hypothesis 2. Teachers who are involved in the Nutrition at School program for two years will evaluate the resource materials as more effective than teachers who are involved for one year.

Table 33 for grades K to 3 indicated over 70% of attenders and non attenders ranked materials as highly effective. Approximately 8% more teachers who indicated materials were highly effective had two years of

Table 31

Effectiveness of Workshop Materials for Teaching Nutrition Education Ranked by Grades K to 3 Teachers by Attendance at the Nutrition at School Workshop

	Effectiveness of Workshop Materials		
Workshop Attendance	Low (1,2)	Moderate (3)	High (4,5)
Didn't Attend n = 102 responses	4 (4.0)	22 (21.4)	76 (74.4)
Did Attend n = 803 responses	52 (6.5)	163 (20.3)	588 (73.2)

Note. A teacher could evaluate each of 7 resource materials for a possible total of 7 responses per teacher.

Table 32

Effectiveness of Workshop Materials for Teaching Nutrition Education Ranked by Grades 4 to 6 Teachers by Attendance at the Nutrition at School Workshop

Workshop Attendance	Effectiveness of Workshop Materials		
	Low (1,2)	Moderate (3)	High (4,5)
Didn't Attend n = 78 responses	5 (6.4)	19 (24.4)	54 (69.3)
Did Attend n = 502 responses	27 (5.4)	137 (27.3)	338 (67.5)

Note. A teacher could evaluate each of 8 resource materials for a possible total of 8 responses per teacher.

Table 33

Effectiveness of Workshop Materials for Teaching Nutrition Education Ranked by Grades K to 3 Teachers by Number of Years of Teacher Involvement in the Nutrition at School Program

Number of Years of Involvement	Effectiveness of Workshop Materials		
	Low (1,2)	Moderate (3)	High (4,5)
1 n = 769 responses	48 (6.3)	159 (20.7)	552 (71.8)
2 n = 148 responses	5 (5.4)	22 (14.9)	118 (79.8)
3 n = 6 responses	0 (0.0)	0 (0.0)	6 (100.0)
4 n = 12 responses	2 (16.7)	3 (25.0)	7 (58.3)
5 n = 7 responses	0 (0.0)	1 (14.3)	6 (85.7)

Note. A teacher could evaluate each of 7 resource materials for a possible total of 7 responses per teacher.

involvement in the program. Six percent more teachers involved for one year than two years indicated materials were moderately effective. The criteria established did not identify a trend. The hypothesis was not supported.

Table 34 for grades 4 to 6 indicated there was a difference between teachers involved for one or two years and their perceived effectiveness of resource materials. Thirteen percent more teachers involved for two years than one year rated materials as highly effective. Fourteen percent more teachers involved for one year rated materials as moderately effective. The pattern supported this hypothesis.

Hypothesis 3. Teachers who perceive nutrition education to be more important will evaluate the resource materials as more effective than teachers who perceive nutrition education as less important.

For grades K to 3 (Table 35) there was no identifiable pattern. Teachers who felt nutrition education should be taught yearly (moderate importance) ranked materials as highly effective. Six percent more teachers who felt nutrition education should be taught yearly (moderate importance) than monthly (high importance) ranked materials as highly effective. A slightly higher percentage of teachers who felt nutrition education should be taught monthly (high importance) ranked materials as moderately effective. There was little difference between the percentage of teachers indicating monthly and yearly teaching of nutrition education who stated materials were of low effectiveness. The hypothesis was not supported.

Table 34

Effectiveness of Workshop Materials for Teaching Nutrition Education Ranked by Grades 4 to 6 Teachers by Number of Years of Teacher Involvement in the Nutrition at School Program

Number of Years of Involvement	Effectiveness of Workshop Materials		
	Low (1,2)	Moderate (3)	High (4,5)
1 n = 514 responses	27 (5.3)	148 (28.8)	339 (66.0)
2 n = 76 responses	5 (6.6)	11 (14.5)	60 (79.0)
3 n = 6 responses	2 (3.3)	3 (50.0)	1 (16.7)
4 n = 1 response	0 (0.0)	0 (0.0)	8 (100.0)
5 n = 8 responses	0 (0.0)	1 (14.3)	6 (85.7)

Note. A teacher could evaluate each of 8 resource materials for a possible total of 8 responses per teacher.

Table 35

Effectiveness of Workshop Materials for Teaching Nutrition Education Ranked by Grades K to 3 Teachers by How Often Nutrition Education Should Be Taught

Frequency of Teaching Nutrition	Effectiveness of Workshop Materials		
	Low (1,2)	Moderate (3)	High (4,5)
Monthly n = 204	10 (4.9)	50 (24.5)	144 (70.6)
Yearly n = 562	35 (6.3)	98 (17.4)	429 (76.3)
Every 2 yrs. n = 102	4 (3.9)	21 (20.6)	77 (75.4)
Every 3 yrs. n = 31	8 (25.8)	4 (12.9)	19 (61.2)

Note. A teacher could evaluate each of 7 resource materials for a possible total of 7 responses per teacher.

In Table 36 (grades 4 to 6) 28% more teachers who indicated yearly teaching of nutrition education rather than monthly, ranked materials as highly effective. Twenty percent more teachers who indicated monthly teaching of nutrition education rather than yearly, ranked materials as moderately effective. The highest percentage of teachers who indicated materials were of low effectiveness felt nutrition education was of low importance (every two years). The hypothesis was not supported since the pattern identified was in the opposite direction to that predicted.

Hypothesis 4. Teachers in rural schools will evaluate the resource materials as more effective than teachers in urban schools.

Table 37 for grades K to 3 indicated no difference between teachers in rural and urban schools and the ranking of effectiveness of resources. Approximately 3% more rural teachers than urban indicated materials were highly effective. Only 3% more rural teachers than urban indicated materials were of low effectiveness. For moderate effectiveness of materials, a 6% difference existed between ranking by urban and rural teachers. Since there was no identifiable pattern evident, the hypothesis was not accepted.

Table 38 for grades 4 to 6 indicated 9% more rural teachers than urban stated materials were highly effective. Only a minimal difference was evident between the percentage of rural and urban teachers who indicated materials were of low effectiveness. Ten percent more urban teachers than rural indicated materials were moderately effective. There was no identifiable pattern so the hypothesis was not accepted.

Table 36

Effectiveness of Workshop Materials for Teaching Nutrition Education Ranked by Grades 4 to 6 Teachers by How Often Nutrition Education Should Be Taught

Frequency of Teaching Nutrition	Effectiveness of Workshop Materials		
	Low (1,2)	Moderate (3)	High (4,5)
Monthly n = 120	4 (3.3)	52 (43.3)	64 (53.3)
Yearly n = 299	16 (5.3)	69 (23.1)	214 (71.6)
Every 2 yrs. n = 139	10 (7.2)	32 (23.0)	97 (69.8)
Every 3 yrs. n = 29	3 (10.3)	6 (20.7)	20 (69.0)

Note. A teacher could evaluate each of 8 resource materials for a possible total of 8 responses per teacher.

Table 37

Effectiveness of Workshop Materials for Teaching Nutrition Education Ranked by Grades K to 3 Teachers by School Location

	Effectiveness of Workshop Materials		
Location	Low (1,2)	Moderate (3)	High (4,5)
Rural n = 692 responses	48 (6.9)	129 (18.6)	515 (74.5)
Urban n = 220	8 (3.6)	54 (24.6)	158 (71.9)

Note. Urban is composed of the sum of Calgary and Edmonton data. A teacher could evaluate each of 7 resource materials for a possible total of 7 responses per teacher.

Table 38

Effectiveness of Workshop Materials for Teaching Nutrition Education Ranked by Grades 4 to 6 Teachers by School Location

Location	Effectiveness of Workshop Materials		
	Low (1,2)	Moderate (3)	High (4,5)
Rural n = 456 responses	27 (5.9)	111 (24.3)	318 (69.8)
Urban n = 148	7 (4.6)	51 (34.5)	90 (60.8)

Note. Urban is composed of the sum of Calgary and Edmonton data. A teacher could evaluate each of 8 resource materials for a possible total of 8 responses per teacher.

Hypothesis 5. Teachers in schools with lower enrolments will evaluate the resource materials as more effective than teachers in schools with higher enrolments.

For grades K to 3 (Table 39) there was no identifiable pattern in teacher's ranking of effectiveness of materials based on school enrolment. Only 3% more teachers in large schools than small schools ranked materials as highly effective. The hypothesis was not supported.

Table 40 (grades 4 to 6) indicated a similar finding of no identifiable pattern based on school enrolment. Only 5% more teachers in small schools than large schools (over 400 students) ranked materials as highly effective. For moderate effectiveness of materials, 5% more teachers in large schools than small schools indicated this ranking. The hypothesis was not supported.

In summary, the main findings are presented for Question 4: Is there an identifiable pattern evident between the selected elements of the teaching environment and the teacher's evaluation of the effectiveness of resource materials?

Hypothesis 1. Teachers who attend the Nutrition at School workshop will evaluate the resource materials as more effective than teachers who do not attend the workshop.

Grades K to 3 and 4 to 6: There was no difference in the perceived effectiveness of resource materials by attenders and non attenders.

Outcome:

Grades K to 3 and 4 to 6: Since there was no identifiable pattern, the hypothesis was not supported.

Table 39

Effectiveness of Workshop Materials for Teaching Nutrition Education
Ranked by Grades K to 3 Teachers by School Enrolment

	Effectiveness of Workshop Materials		
Number of Students	Low (1,2)	Moderate (3)	High (4,5)
0 - 200 n = 272	16 (5.9)	59 (21.7)	197 (72.4)
201 - 400 n = 341	26 (7.6)	52 (15.2)	263 (77.1)
401 + n = 254	15 (5.9)	58 (22.8)	181 (71.3)

Note. A teacher could evaluate each of 7 resource materials for a possible total of 7 responses per teacher.

Table 40

Effectiveness of Workshop Materials for Teaching Nutrition Education Ranked by Grades 4 to 6 Teachers by School Enrolment

Number of Students	Effectiveness of Workshop Materials		
	Low (1,2)	Moderate (3)	High (4,5)
0 - 200 n = 178	9 (5.0)	45 (25.3)	124 (69.7)
201 - 400 n = 175	11 (5.7)	50 (28.6)	117 (66.7)
401 + n = 242	14 (5.8)	67 (27.7)	161 (66.5)

Note. A teacher could evaluate each of 8 resource materials for a possible total of 8 responses per teacher.

Hypothesis 2. Teachers who are involved in the Nutrition at School program for two years will evaluate the resource materials as more effective than teachers who are involved for one year.

Grades K to 3: There was no identifiable pattern evident.

Grades 4 to 6: Teachers involved for two years tended to rank materials as being more effective than teachers involved for one year.

Outcome:

Grades K to 3: Since there was no identifiable pattern, the hypothesis was not supported.

Grades 4 to 6: The pattern identified supported the hypothesis.

Hypothesis 3. Teachers who perceive nutrition education to be more important will evaluate the resource materials as more effective than teachers who perceive nutrition education as less important.

Grades K to 3: There was no identifiable pattern.

Grades 4 to 6: The highest percentage of teachers who ranked materials as more effective indicated nutrition education should be taught yearly (moderate importance) rather than monthly.

Outcome:

Grade K to 3: The hypothesis was not supported since there was no identifiable pattern.

Grades 4 to 6: The pattern identified did not support the hypothesis.

Hypothesis 4. Teachers in rural schools will evaluate the resource materials as more effective than teachers in urban schools.

Grades K to 3: There was no difference between urban and rural teachers ranking of effectiveness of materials.

Grades 4 to 6: A relatively higher percentage of rural teachers than urban teachers ranked materials as more effective.

Outcome:

Grades K to 3 and 4 to 6: There was no identifiable pattern, according to our criteria, so the hypothesis was not accepted.

Hypothesis 5. Teachers in schools with lower enrolments will evaluate the resource materials as more effective than teachers in schools with higher enrolments.

Grades K to 3 and 4 to 6: There was no difference in teacher's ranking of effectiveness of materials based on school enrolment.

Outcome:

Grades K to 3 and 4 to 6: Since there was no identifiable pattern, the hypothesis was not supported.

CHAPTER VI

DISCUSSION AND IMPLICATIONS

The first section of this chapter will discuss the results in terms of the elements of the teaching environment considered in this study. The second section will present limitations of the study. The final section will suggest implications of the study for the Nutrition at School Program.

The Elements in the Teaching Environment

The present study looked at selected aspects of the teaching environment and their impact on the teacher's perception of the number of concepts taught, objectives achieved and the relative level of use and evaluation of resource materials. The elements included in the analysis were teacher attendance at the Nutrition at School workshop, the number of years of teacher involvement in the program, the teacher's perception of the importance of nutrition education, school location (rural/urban) and school enrolment. The impact of these elements was studied in reference to the number of concepts taught, objectives achieved, resource materials used by the teacher and the teacher's perception of the effectiveness of resource materials. The findings will be discussed for each element.

Workshop Attendance

For grades K to 3, some minimal impact of the workshop was evident since in two of the four years, more attenders than non attenders

implemented one or more concepts. This trend was not supported as strongly as expected. Several other factors may affect the workshop impact. Workshop materials may be available to both attenders and non attenders through informal circulation of material between teachers. This wider distribution of materials may diffuse the impact of the workshop. The years of teaching experience of attenders and non attenders may also affect whether workshop attendance impacts on the number of concepts implemented. This was not measured in the present study. Two target groups for further study are suggested. Workshop attenders who did not teach concepts and non attenders who did teach concepts may have various unique factors in their teaching background or approach that could further our understanding of this teaching element.

For grades 4 to 6 teachers, the workshop appeared to have minimal or no impact on the number of concepts implemented by the teacher. Possible factors affecting the outcome may be that current publicity and interest in nutrition education may have already raised the consciousness of these teachers to teach nutrition education. Possibly Alberta teachers are a particularly motivated group and do not need the workshop as a motivator. The readily available resource materials may also decrease the expected impact of the workshop. These findings for grades 4 to 6 teachers tend to support Cook et al. (1977) who indicated the number of general nutrition workshops a teacher attended was not significantly related to whether nutrition was included in a teacher's classroom activities.

The impact of the workshop on the number of objectives achieved by attenders and non attenders was more apparent for grades 4 to 6 than for

grades K to 3. Workshop attendance did not clearly indicate whether grades K to 3 teachers will perceive that they have achieved more objectives. For grades 4 to 6, more non attenders than attenders achieved one or more objectives which was opposite to the predicted outcome. Factors for further research, which were not a part of the data available for this study, including teacher background and experience, availability of materials, teacher motivation and the nature of the workshop in each year. Variability in these factors may affect the impact of the workshop.

Contrasting findings were evident for grades K to 3 and 4 to 6 regarding workshop attendance and the number of materials used by the teacher. For grades K to 3, a higher percentage of attenders than non attenders indicated high usage of materials. For grades 4 to 6, a higher percentage of attenders indicated low usage of materials. Difference in types of resources used by K to 3 and 4 to 6 teachers may be a factor. McEwen (1981:76) found that grades 4 to 6 teachers used the booklet "Handy Nutrition" more than grades K to 3 teachers. This finding may indicate that teachers at various grade levels use different teaching methods and types of resources. The lower grade levels may require a greater number of resources.

This researcher suggests that Grades K to 3 teachers may prefer more visual resources. Grades 4 to 6 teachers may use more technical material or outside resources such as films, field trips or speakers. McEwen's study did not identify subsequent differences between grades K to 3 and 4 to 6 teachers on the additional resources used. This could be an area for further study requiring qualitative analysis of resources.

There appears to be no impact of workshop attendance on teachers perceived effectiveness of materials for both grades K to 3 and 4 to 6 teachers. Overall, teachers saw the materials as generally effective.

Given the data in this study, attendance at the workshop does not effectively distinguish between teachers who teach more or less concepts, achieve more or less objectives, or indicate relative levels of use and evaluation of resource materials. Cook's previous study (1977) suggested a similar trend in that the number of general nutrition workshops a teacher attended was not significantly related to whether nutrition was included in a teacher's classroom activities. At the present time, the Nutrition at School workshop is mandatory for involvement in the program requiring large investments of teachers' time and expenditure of Alberta Agriculture resources. Given these factors, this area demands more in depth analysis than was possible in this study.

While it is evident that the workshop is not the only source of nutrition information for teachers, no measure was made of the teacher's prior training or experience in this area. The content of the workshop and its primary objectives were not scrutinized. If one wishes to gain a better idea of the true impact of the workshop, these elements must be controlled in an experimental design. Selected teachers would receive a standard workshop prior to involvement in the program. Another group of teachers would not attend the workshop before teaching the program. Varying outcomes between the two groups in implementing the program could be identified. This approach may also allow Alberta Agriculture to identify the needs which should be addressed in the workshop experience.

Years of Involvement in the Program

For both grades K to 3 and 4 to 6, the number of years of involvement did affect the number of concepts and objectives implemented by the teachers. The highest percentage of teachers implementing one or more concepts and objectives were involved in the program for one year rather than two years. McEwen (1981:73) found that for teachers of grades 4 to 6 the percentage of teachers who taught nutritional concepts and achieved objectives showed a decided drop in years following the first year of involvement. Motivational factors such as more enthusiasm by the teachers and school administration may be evident in the first year. In the school context, Cooper and Philp (1974) found that teachers under school boards and consultants who strongly endorsed the nutrition program, covered the workshop objectives to a greater extent in both breadth and depth in the classroom. These administrative elements were not measured in the present study. However, the impact of selected administrative factors on the teacher's implementation of the program would be an area for further research.

For both grades K to 3 and 4 to 6, the number of years of teachers involvement did not effectively distinguish between teachers who used more or less resource materials. For example, low users of materials indicated having either one or two years of involvement in the program. Contrasting findings were evident regarding grades K to 3 and 4 to 6 teacher's perceived effectiveness of resource materials. For grades K to 3, the teacher's perceived effectiveness of materials was not affected by number of years of involvement. However, for grades 4 to 6, teachers involved for two years in the program ranked materials as more effective

than those involved for one year. Perhaps the teachers were more familiar with the materials by the second year and this influenced their effectiveness rating.

A clearer indication might be gained regarding years of teacher involvement and teacher's relative ranking of effectiveness of resource materials. Small groups of teachers who are involved for either one or two years in the program might be asked to scrutinize the materials based on established criteria. The similarities or differences in their ranking of effectiveness of materials could then be determined.

Further research would be valuable to identify factors that maximize teachers implementing more concepts and objectives in their first year of involvement. Possible means of introducing these factors in the second year of teacher involvement may be explored. Future study may focus on two separate groups of teachers namely those with one year and two years of involvement. Each group could be interviewed to determine their evaluation of the teacher workshop (a repeat experience for teachers with two years of involvement), the approach used in planning and implementing the program, and perceived differences in administrative supports including the role of the home economist. In addition, classroom observation of teachers with one or two years of involvement in the program may identify differences in the program implementation. This additional information could assist Alberta Agriculture in providing needed support to the second year teachers.

Teacher's Perception of Importance of Nutrition Education

For both grades K to 3 and 4 to 6, the teacher's perception of the importance of nutrition education distinguished between teachers who taught more or less concepts asnd achieved more or less objectives. However, the findings were not in the predicted direction. The researcher expected that a higher percentage of teachers who felt nutrition education was of high importance (taught monthly) would teach one or more concepts and objectives. In fact, teachers who felt nutrition education was of moderate or low importance taught more concepts and achieved more objectives.

In explaining this outcome, the design of the questionnaire item had a possible ambiguity. Some respondents may have interpreted frequency of teaching nutrition education as being specifically the Nutrition at School program. In this case, teaching the program monthly may have appeared unrealistic due to time constraints with preparation for other courses. A clearer definition of nutrition education may have avoided this possibility. The teacher's perception of importance of nutrition education did not clearly indicate whether the teacher will use more or less materials. For both grades K to 3 and 4 to 6 there was no identifiable pattern evident to indicate any impact of this variable.

Contrasting findings were apparent for grades K to 3 and 4 to 6 regarding teacher's perception of importance of nutrition education and teacher's ranking materials as more or less effective. For grades K to 3, this variable did not distinguish between variation in teacher's ranking of effectiveness of materials. However, for grades 4 to 6, the variable was a distinguishing factor. Teachers who ranked materials as

more effective indicated nutrition education should be taught yearly (of moderate importance) rather than monthly (of high importance).

Given the data in this study, the teacher's perception of the importance of nutrition education only distinguished particular aspects of the grades 4 to 6 teacher's implementation and evaluation of the program. The measuring instrument used may be a limiting factor in identifying the impact of this variable. The researcher suggests that the indirect measure of teacher attitude toward the importance of nutrition education could be refined to give more accurate results. O'Connell, Shannon and Sims (1981:81) indicate that nutrition researchers have not always defined attitudes carefully or studied them within the proper theoretical framework. Their instruments and the process used to assess teachers' attitudes and beliefs towards nutrition education is more comprehensive for our purposes.

O'Connell et al. developed two different types of instruments to assess the teachers' disposition toward nutrition education. A Likert-type format was utilized in which respondents were asked to indicate the extent of their agreement to individual statements by choosing one of five responses ranging from "strongly agree" (scored as 5) to "strongly disagree" (scored as 1). This format was used to reflect the degree of importance teachers placed on nutrition in general (the Nutrition is Important Attitude Scale) and whether teachers thought it important to teach nutrition to school children (Favors Nutrition Education in Schools Attitude Scale). A sample item from the Nutrition is Important Attitude Scale includes the statement "I am concerned about eating nutritious foods throughout the day". A sample item from the

Favors Nutrition Education in Schools Attitude Scale is "It's very important that children be taught nutrition in schools". The attitude instruments above contained 19 statments covering cognitive beliefs, emotional feelings, and action orientation which are component parts of attitudes according to these researchers.

A second instrument was constructed to assess how important teachers believed nutrition education to be when positioned in competition for classroom time. This attitude scale, entitled the Commitment to Teaching Nutrition Scale, was aimed at reflecting behavior. Three types of items were used which were either open-ended questions, assigning numerical ranks to objects in terms of their desirabilty in various situations, and forced choice items. Various scoring techniques were used for each instrument.

These more refined instruments would be valuable in measuring teachers' attitudes to nutrition education in future studies. O'Connell, Shannon and Sims (1981:84) caution that their instruments may not be valid for a general assessment of teachers' attitude toward nutrition education. In their study, the number of teacher respondents was small and not randomly selected. However, to be adopted for general use, the instruments should be further tested on a larger, randomly selected sample of teachers. The teachers in the Nutrition at School program would definitely meet these requirements.

School Location

For grades K to 3, school location distinguished between teachers who taught more or less concepts. In all years, a higher percentage of

rural teachers than urban teachers implemented one or more concepts. Several possible explanations would require further study. Rural teachers may perceive the program as being identified with rural extension services and have a stronger interest in the program. In addition, teachers in smaller rural schools may view the Nutrition at School program as an enrichment program in comparison to urban teachers with additional resources and programs. Rural teachers may have a different workload and be teaching fewer optional subjects than urban teachers.

The school location did not distinguish between grades 4 to 6 teachers who taught more or less concepts, or grades K to 3 and 4 to 6 teachers who achieved more or less objectives. For grades K to 3 and 4 to 6 teachers, a greater percentage of urban teachers than rural indicated low usage of materials. Rural teachers indicated a higher usage of a moderate number of materials than urban teachers. This finding may relate to Scharf's statement that rural elementary schools suffer from inadequate library and instructional resources. Rural teachers may use the workshop materials more extensively due to a relative lack of other library resources compared to urban teachers. For grades K to 3 there was no difference in teacher's perceived effectiveness of materials by school location. For grades 4 to 6, more rural teachers than urban ranked materials as being more effective. This finding may be related to the higher usage of materials by rural teachers.

In future studies, a definition of urban/rural which is based on population or regional characteristics may give a clearer indication of

the impact of this variable. In their Ontario study of elementary teachers, Cooper and Philp (1974:10) indicated:

> Our method of determining urban or rural location of schools was largely judgemental. Schools in cities with populations of 100,000 or more were obviously urban. Remaining schools, were judged urban if they were in proximity to a large urban centre, or rural if located in an area of 1,000 or less and away from any large urban centre.

Humphreys discussed four population categories in Saskatchewan, namely farming communities, a village or small town with under 10,000 population, a small city with population of 10,000 to 50,000, and a large city or metropolitan area of over 50,000 population. No clear basis for the urban/rural distinction was given. Further consultation with specialists familiar with Alberta demographic characteristics such as The Population Research Laboratory at the University of Alberta would be helpful. On the basis of an urban/rural population-based definition, further study might include similarities and differences in the school context (adequacy of library and instructional resources, and instructional support) and teacher context (opportunities for teacher's professional development and teacher training). This approach would enable Alberta Agriculture to identify particular needs evident in rural/urban settings of the Nutrition at School program.

School Enrolment

Overall, school enrolment only distinguished between grades 4 to 6 teachers who taught more or less concepts and achieved more or less objectives. In all years, the highest percentage of teachers who taught one or more concepts or achieved one or more objectives taught in mid-size schools. Humphreys (1971) suggested that to ensure good

personal relationships along with economy it appears that schools with nine to twenty-five teachers are most appropriate at the elementary school level. For school enrolment this would be a minimum of 225 students corresponding to the mid-size school in this study.

School enrolment was not an indicator of whether grades K to 3 teachers taught more or less concepts or achieved more or less objectives. For all grades, this variable did not affect the teacher's relative use of resource materials. Since all materials are provided at the workshop this may have neutralized the effect on the size of school as a factor in material usage. The smaller schools will have the same opportunity as larger schools to use the resources provided. A greater difference might be detected if materials had to be purchased or requested by the teachers or schools. Regarding school enrolment and effectiveness of materials, there does not appear to be any impact for grades K to 3 or 4 to 6 teachers.

School enrolment may be an indicator of elements which were not measured in this study. Scharf found that within the rural school sample, the availability of the instructional aids and resources was directly related to school size with smaller schools having the fewest resources. This would require a comprehensive inventory of resources available to the school, which was not measured in this study. McEwen (1981:100) found that the main difficulties experienced by teachers in obtaining additional resources related to obtaining films when needed by the school. This finding was not related to size of school. Further study would be required to confirm or reject Humphreys findings (1971:9) that the size of school is indicative of the degree to which facilities

and experienced teaching, resource and administrative personnel can be provided, and of the difficulties teachers may encounter in coping with students who differ in interests, age and aptitude.

Limitations of the Study

Several limitations specific to secondary analysis are applicable. First, a larger sample size in many categories studied would have been desirable. The crosstabulations eliminated some respondents from the secondary analysis and reduced the sample size. The sample size limitation affected the type of analysis that was possible. Blalock (1972:34) suggested a minimum of 50 cases is desirable as a basis for percentage calculations. Some of the categories did not meet this criteria and were eliminated from discussion or results were treated cautiously. A larger sample size would allow further options for treating the variables as interrelated rather than isolated elements.

The researcher was also limited as to the number and types of variables available in the original study. From the literature, additional variables required study or appeared to have more impact. However, these variables such as teaching experience were not on the original questionnaire and could not be investigated. In addition, more direct and refined measures of some variables were required than available from the original study. As indicated previously, the teacher's perceived importance of nutrition education requires a more comprehensive indicator. McEwen (1981:78) noted the effectiveness scale was only a rough indicator of the effectiveness of materials because the teachers did not have specific criteria for each material.

Another limiting factor was the retrospective nature of the data. The difficulty of teacher's recalling use of materials and implementation of concepts and objectives over a four year period affected the accuracy and completeness of data. In addition, some survey responses may be inaccurate due to the social desirability effect. For example, some respondents may have given the socially desirable response of teaching several or all objectives. In fact, the teacher may not have taught any objectives. Another item on the questionnaire or an additional behavioral measure of implementation would have verified the information obtained.

Implications for the Nutrition at School Program

Directions for further areas of study are suggested by this research. To further our understanding of the teaching environment, a comprehensive framework for school nutrition education progarms is important. Gillespie (1981:150) proposes a framework that suggests a broader approach to studying nutrition education programs than the program evaluation approach that has characterized much nutrition education research. The framework focuses on the change process of nutrition education and allows us to systematically identify and study factors that influence the impact of a program. Gillespie's framework involves interaction among three relevant environments: the home and family, school, and community. Gillespie suggests studying a program in relation to these environments to identify factors that facilitate or block change. Understanding the influences of these environments and their relative importance can serve as a basis for designating program

objectives, identifying intervention targets and determining potentially effective strategies. This approach means considering the Nutrition at School program in a total context including the three environments - home and family, school, and community.

Gillespie outlines important influences in each of these environments.

> The primary influences within the home and family environment are parents, siblings and the eating situation. Important factors are the parents' nutrition knowledge and beliefs, attitudes towards nutrition and food preferences; the dynamics of the eating situation, including foods available in the home; and food preferences of siblings. Although some of these relationships have been studied, they need to be considered in a total context and in relation to the school environment. (1981:151)

Important elements in the school environment are teachers, administrators, food service personnel, and peers. Teachers have a direct effect on the child's nutrition experiences in the classroom and an indirect effect through the school and lunchroom atmosphere. School administrators and food service personnel control the lunchroom procedures and atmosphere. Opinions and interactions with peers are important influences on children in general, although there is limited data on food behavior in the school environment in particular. Community characteristics such as urbanization and socio economic status may affect chidren's eating practices through the availability of certain foods, access to fast food restaurants and community norms.

The elements that are identified in each of the three environments can influence programs that are designed to change children's current nutrition attitudes, knowledge and behavior. Each element would have a direct influence on the program implementation and an indirect influence

on the outcomes of a school nutrition education program. The Nutrition at School program has three target audiences that relate to these contexts - the teacher, the parent and the child. The primary focus of recent studies has been the teacher in the school context. Shifting the focus to the stated program goals relating to the parents and children may be timely.

The stated program objective concerning parents is that "parents will acquire knowledge about nutritional needs and be motivated to apply this knowledge to their family's eating habits thereby reinforcing what their children have learned in Nutrition at School". To design strategies to meet this goal, further study of the parent and child in the home environment regarding the Nutrition at School program is suggested. McDonald, Brun and Esserman (1981:140) assessed behavior, attitudes and knowledge of children in grades K to 6 who were exposed or not exposed to a nutrition learning system in school. In-home interviews were conducted with children and mothers to determine if in-school nutrition education influenced children's reported food behaviours outside the classroom. These findings provided evidence that in-school nutrition education influenced children's reported food behaviours outside the classroom. In addition, continued efforts should be made to influence nutrition knowledge, attitudes and behavior of parents. Newsletters, parent nutrition workshops and special events are possible inputs which should be evaluated by parents to provide future program direction.

Another area for further study in the school context involves developing or adapting behavioral measures for further assessment of

program implementation. Additional information may be obtained on an ongoing basis, through classroom observation techniques, content analysis of teacher's lesson plans, focused individual or group interviews, and measurement of student achievement. The systematic collection of appropriate records in conjunction with other self-report or observation procedures can provide valuable information on the present level of program implementation compared to the desired level. According to a recent report on "Models of Measuring Program Implementation" (1981:70), observational techniques appear to be the best available alternative for measuring the materials, structure and role/behavior dimensions of education programs. This researcher suggests that further information also be obtained on various aspects of program implementation and relative outcome measures such as student achievement. This information may provide necessary input for program developers in terms of meeting stated program goals for school children.

Conclusion

The Nutrition at School program is an established, dynamic program operating in the school context. This study which focused on the teaching environment may contribute to our understanding of the teacher's implementation of the program. However, future program direction may require further consideration of the broader nutrition education process involving the school in relation to the home and community contexts.

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APPENDIX A

QUESTIONNAIRE

The questionnaire consists of four parts. In addition, some teachers will recieve a fifth part in which they will be asked to evaluate some draft written resource materials.

Part One

1. As a teacher, in which school year(s) were you involved in the Nutrition at School program? Please check the year(s) that you were involved:

1973/74	_____	1977/78	_____
1974/75	_____	1978/79	_____
1975/76	_____	1979/80	_____
1976/77	_____		

2. Did you attend Nutrition at School teacher workshop(s)?

   Yes _____ No _____

   If yes, please state in which year(s) _____

3. What grade or grades did you teach in each of the following years?

   (Note: Fill in only those years applicable to you.)

   1976/77 _____

   1977/78 _____

   1978/79 _____

   1979/80 _____

4. What grades are taught in your school? _____

5. Approximately how many students attend your school? _____

6. Where is your school located? Check one:

   Calgary _____

   Edmonton _____

   Other (Please specify) _____

PART TWO (A) FILL IN IF YOU ARE A TEACHER OF GRADES K TO 3. IF YOU TEACH GRADES 4 TO 6 GO ON TO PART TWO (B) ON PAGE 5.

While you were involved in the Nutrition at School program you were introduced to nutritional concepts and teaching objectives in the "Big Ideas in Nutrition Education" curriculum package.

We realize it is not always possible to teach all the concepts or attain all the teaching objectives set up in the units. The reasons for this may be varied.

We are interested, however, in finding out what nutritional concepts you taught and what teaching objectives you met in your classroom. If you did not teach some concepts, or did not feel that certain objectives were met, we would appreciate knowing why this is so in order to realistically plan future materials.

I. For each CONCEPT listed below:

1. Circle the year you were first involved in the Nutrition at School program.
2. Check each year in which you taught the concept.
3. If you did not teach the concept check all those reasons why you did not.

CONCEPTS for Teachers of Grades K to 3:	Years 1976/1977	1977/1978	1978/1979	1979/1980	Reasons for not teaching CONCEPT (Check all those that apply)
A. A balanced daily diet includes foods selected from each of the four food groups.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource material not appropriate for integration into lesson plans ☐ other (specify) _____

CONCEPTS for Teachers of Grades K to 3:	Years 1976/1977	1977/1978	1978/1979	1979/1980	Reasons for not teaching CONCEPT (Check all those that apply)
B. Foods from the four food groups supply the nutrients needed for growth, health and energy.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____

II. For each TEACHING OBJECTIVE listed below:

1. Circle the year you were first involved in the Nutrition at School program.
2. Check each year in which you feel you met the teaching objective.
3. If you did not meet the objective check all those reasons why you did not.

TEACHING OBJECTIVES for Teachers of Grades K to 3:	Years 1976/1977	1977/1978	1978/1979	1979/1980	Reasons for not meeting objective (Check all that apply)
1. Identification - The student will be able to name and enjoy a variety of foods from the four food groups.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource materials too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____

TEACHING OBJECTIVES for Teachers of Grades K to 3:	Years 1976/1977	1977/1978	1978/1979	1979/1980	Reasons for not meeting objectives (Check all those that apply)
2. Classification - The student will be able to classify foods into the four food groups.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____
3. Selection - The student will be able to choose nutritious snacks and well-balanced meals from the four food groups.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____
4. Function - The student will explain the importance of foods from the four food groups for growth, health and energy.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____

PART TWO (B) FILL IN IF YOU ARE A TEACHER OF GRADES 4 to 6. IF YOU TEACH GRADES K TO 3 GO ON TO PART THREE (A) ON PAGE 8.

While you were involved in the Nutrition at School program you were introduced to nutritional concepts and teaching objectives in the "Big Ideas in Nutrition Education" curriculum package.

We realize it is not always possible to teach all the concepts or attain all the teaching objectives set up in the units. The reasons for this may be varied.

We are interested, however, in finding out what nutritional concepts you taught and what teaching objectives you met in your classroom. If you did not teach some concepts, or did not feel that certain objectives were met, we would appreciate knowing why this is so in order to realistically plan future materials.

I. For each CONCEPT listed below:

1. Circle the year you were first involved in the Nutrition at School program.
2. Check each year in which you taught the concept.
3. If you did not teach the concept check all those reasons why you did not.

CONCEPTS for Teachers of Grades 4 to 6:	Years 1976/1977	1977/1978	1978/1979	1979/1980	Reasons for not teaching concept (Check all those that apply)
A. A wide variety of nutrients is essential for growth, health and energy.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____ _____ _____

CONCEPTS for Teachers of Grades 4 to 6:	Years 1976/1977	1977/1978	1978/1979	1979/1980	Reasons for not teaching concept (Check all those that apply)
B. A combination of foods from the four food groups provides the necessary nutrients to perform these functions	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____

II. For each TEACHING OBJECTIVE listed below:

1. Circle the year you were first involved in the Nutrition at School program.
2. Check each year in which you feel you met the teaching objective.
3. If you did not meet the objective check all those reasons why you did not.

TEACHING OBJECTIVES for Teachers of Grades 4 to 6:	Years 1976/1977	1977/1978	1978/1979	1979/1980	Reasons for not meeting objective (Check all those that apply)
1. Identification - The student will discover by experiment, that different foods contain different nutrients.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____

TEACHING OBJECTIVES for Teachers of Grades 4 to 6:	Years 1976/1977	1977/1978	1978/1979	1979/1980	Reasons for not meeting objective (Check all those that apply)
2. Classification - The student will classify foods into the four food groups on the basis of nutrient content.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource material not appropriate for integration into lesson plans ☐ other (specify) _____
3. Function - The student will identify the funtions of the leader nutrients in each of the four food groups in terms of growth, health and energy.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____
4. Selection - The student will choose nutritious snacks and well-balanced meals from the four food groups.	___	___	___	___	☐ not enough class time ☐ not enough preparation time ☐ concept too complex for students ☐ resource material too complex for students ☐ resource materials not appropriate for integration into lesson plans ☐ other (specify) _____

PART THREE (A) FILL IN IF YOU ARE A TEACHER OF GRADES K TO 3. IF YOU ARE A TEACHER OF GRADES 4 TO 6 GO ON TO PART THREE (B) ON PAGE 9.

In this part of the questionnaire we wish to find out what resources you used to teach nutrition education in your classroom.

1. The following is a list of nutrition education resource materials you received at the Nutrition at School teacher workshop.

   For each material listed:

   1. Circle the year in which you were first involved in the Nutrition at School program.
   2. Check off all the years in which you used that resource material.
   3. Circle the number in the right hand column corresponding to how effective that resource material was for you in teaching nutritional concepts for your classroom.

Materials for Teachers of Grades K to 3:	Years 1976/1977	1977/1978	1978/1979	1979/1980	Effectiveness for teaching nutritional concepts VERY EFFECTIVE				NOT EFFECTIVE
"Big Ideas in Nutrition Education" envelope	___	___	___	___	5	4	3	2	1
Study Prints (Photographs with classroom discussions on back)	___	___	___	___	5	4	3	2	1
Food Models (small individual food photographs)	___	___	___	___	5	4	3	2	1
Handy Nutrition booklet	___	___	___	___	5	4	3	2	1
Canada Food Guide poster	___	___	___	___	5	4	3	2	1
Let's Talk about Food (from Alberta Agriculture)	___	___	___	___	5	4	3	2	1
Good Eats for Children (recipes)	___	___	___	___	5	4	3	2	1
Teachers Supplement (mimeographed materials from Alberta Agriculture)	___	___	___	___	5	4	3	2	1

PART THREE (B) FILL IN IF YOU ARE A TEACHER OF GRADES 4 TO 6. IF YOU ARE A TEACHER OF GRADES K TO 3 GO ON TO PART THREE (C) ON PAGE 10.

In this part of the questionnaire we wish to find out what resources you used to teach nutrition education in your classroom.

1. The following is a list of nutrition education resource materials you received at the Nutrition at School workshop.

   For each material listed:

   1. Circle the year in which you were first involved in the Nutrition at School program.
   2. Check off all the years in which you used that resource material.
   3. Circle the number in the right hand column corresponding to how effective that resource material was for you in teaching nutritional concepts in your classroom.

Materials for Teachers of Grades 4 to 6:	1976/ 1877	1977/ 1978	1978/ 1979	1979/ 1980	Effectiveness for teaching nutritional concepts VERY EFFECTIVE				NOT EFFECTIVE
"Big Ideas in Nutrition Education" envelope	___	___	___	___	5	4	3	2	1
Bar Graphs	___	___	___	___	5	4	3	2	1
Food Models (small individual food photographs)	___	___	___	___	5	4	3	2	1
Handy Nutrition booklet	___	___	___	___	5	4	3	2	1
How Your Body Uses Food	___	___	___	___	5	4	3	2	1
Food Trek (digestive system poster)	___	___	___	___	5	4	3	2	1
Canada Food Guide poster	___	___	___	___	5	4	3	2	1
Let's Talk About Food	___	___	___	___	5	4	3	2	1
Teacher's Supplement (mimeographed materials from Alberta Agriculture)	___	___	___	___	5	4	3	2	1

PART THREE (C) FOR ALL TEACHERS TO FILL IN.

1. Were there any materials provided at the Nutrition at School teacher workshop which you did not use at all?

   Yes _____ No_____

   If yes, why did you not use them?

   Didn't think were appropriate _____

   Didn't have time to use _____

   Didn;t get enough exposure on how to use _____

   Other (please specify)_____

   _____

   _____

2. Should all the materials for the Nutrition at School program be provided all at once, or should some additional materials be provided in a follow-up program?

   Check one: All at once_____ In a follow-up program_____

   If you checked "in a follow-up program", what materials would you like to see provided?_____

   _____

3. At the Nutrition at School teacher workshop you received a list of resources you could use in addition to the "Big Ideas" materials (ie. films, books, guest speakers, slides, printed materials).

   a) Which of these or other resources did you use while your school was on the Nutrition at School program? Please specify titles and put a check mark beside the ones you found especially useful to you: _____

   _____

   _____

   _____

   _____

3. (b) If you were involved in the Nutrition at School program before 1979/80 which of these other resources referred to in part (a) did you use in the years following the year you were involved in the Nutrition at School program? Please specify titles and put a check mark beside those you found especially useful: _____

_____

_____

_____

4. If you used any of the additional resources available, did you or your school experience any difficulties in obtaining them? Yes _____ No_____

If yes, please specify _____

_____

_____

5. The material in the "Big Ideas in Nutrition Education" packages covers several grades. Could you tell us what you do to avoid repetition for the student as he/she moves from one grade to the next? _____

_____

_____

_____